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DIESEL RAILWAY TRACTION SUPPLEMENT

The July issue of THE RAILWAY GAZETTE *Supplement, illustrating and describing developments in Diesel Railway Traction, will be ready on July* 1, *price* 1s.

NOTICE TO SUBSCRIBERS

Consequent on paper rationing, new subscribers in Great Britain cannot be accepted until further notice. Any applications will be put on a waiting list, and will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions. Orders for overseas destinations can now be accepted

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE *possesses the necessary permit and facilities for such dispatch.*

We would emphasise that copies addressed to place in Great Britain should not be re-directed to places overseas

TO CALLERS AND TELEPHONERS

Until further notice our office hours are: Mondays to Fridays 9.30 *a.m. till* 5.30 *p.m.*

The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

Railway Revenues and Government Control

MR. MAURICE BIGIO, a railway stockholder, has written to Lord Leathers suggesting that the profit the Government has made out of the present railway control agreement should be treated as a pool for the railway companies to draw on, if their earnings in any one year after the termination of the agreement should fall below the standard revenue provided in the Railways Act, 1921. He points out that this would be granting them the same privilege as that extended to other businesses and trading concerns which have paid Excess Profits Tax, including shipping and road transport undertakings. The pool, he suggests, should be made available for a minimum of five years from the termination of the agreement. Assuming that the companies did not earn their standard revenue, but showed a deficit of about £6½ millions each year, on the average, the most the Government would be called on to refund would be about £8 milions a year, or some £40 millions over the five years, which compares with more than £175 millions already received by the Government as its share of the profits. *The Financial News,* which prints Mr. Bigio's letter to Lord Leathers, also gives a reply from the Ministry of War Transport. It is signed by Sir Reginald Hill, Deputy Director General (Inland Transport) and states quite shortly that he is directed by the Minister to state that any discussion of the terms of the railway control agreement is a matter on which he must deal directly with the Chairmen of the railway companies.

* * * *

Railway Nationalisation and the Election

In the letter to *The Financial News* enclosing the correspondence with Lord Leathers, Mr. Bigio urges that stockholders in the various constituencies should contact Parliamentary candidates on the matter of the railway control agreement and endeavour to obtain a promise that the railways should receive the same treatment as companies which have made and paid excess profits. He suggests, too, that stockholders who favour nationalisation should approach their Labour candidates and endeavour to obtain an explanation as to what is meant by suggestions that the railways should be taken over at present-day values. If this means that assets will be taken over at today's values, or the cost of replacement, stockholders would get a fair deal. If it refers to present Stock Exchange values of the securities, then, as these have been and still are, unduly depressed because of statements of M.Ps. and others of their intention to acquire the railways on terms amounting to confiscation, then it is believed that few, especially stockholders, would vote for nationalisation. Giving his view as a trader, Mr. Bigio says that his experience with Government departments has shown him that the system is much too slow and complicated, and that it takes twice as long to get anything done as when dealing with commercial concerns.

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Publication of Railway Accounts

In an editorial note in our May 11 issue we drew the inference that the Public Utility Undertakings (Prevention of Publication) Order, 1944, might enable the full accounts and statistics of the four main-line railways to be published for the year 1945. We are now informed that the Order is relevant to non-controlled railway undertakings but does not apply to the main-line railways. The modified form in which the accounts of the latter have been published during Government control is governed by the Railway Companies' (Accounts & Returns) Order (No. 3), 1941. This Order referred to the accounts of controlled railway companies for the year 1940 and its provisions have been extended by special Orders to apply to each subsequent year. Security is not the only consideration influencing the publication of controlled railway companies' accounts in an abridged form; the suspension of inter-company settlements in respect of receipts and non-maintenance expenditure during control make the figures dealt with by the individual companies unrepresentative and misleading.

* * * *

Post-War Trade with Argentina

A plan was drawn up recently by the Argentine Government providing for the construction of heavy railway material, including axles and tyres for locomotives, carriages, and wagons, in the workshops of the State Railways in Cordoba. There are still, however, certain parts which cannot be made satisfactorily, states *A Review of Commercial Conditions in Argentina,* published by the Stationery Office (1s. net). These include high-speed diesel engine crankshafts of multi-cylinder types, fuel injection equipment and complicated castings such as cylinder heads. The demand from Argentina for both capital and consumer goods is expected to be very substantial. There is certain to be a large demand for replacements, spare parts, and extensions to the equipment of public utility companies. Both the State and privately-owned railways will wish to embark on heavy renewals of rolling stock. It is estimated that the British-owned railway

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companies alone require renewals to the value of between £15,000,000 and £20,000,000. The State Railways recently called for tenders for the building of workshops to specialise in the construction of axles and tyres, but although it is considered that the casting of axles and tyres of simple types would present no difficulty to local engineers, it is expected that it will be some considerable time before the quality and technical standard of imported products can be equalled.

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Port of Bristol During the War

The wartime achievements of the Port of Bristol as revealed in the recent report by Mr. R. H. Jones, the General Manager, add a notable chapter to the long history of the port. By virtue of its geographical position and the diversion for strategic reasons of shipping to West Coast ports Bristol was called upon to take heavy responsibilities as to overseas trade, and the Avonmouth docks were used almost to capacity. With the advent of wartime controls the peacetime imports of grain, tobacco, cocoa, fruit, paper, timber, etc., were considerably diminished and some entirely disappeared. In other directions, however, these losses were made good. There was a vast increase in the petroleum trade and the port also took its full share in connection with the military campaigns in all theatres of war, culminating with the D-Day operations. A very substantial part of the supplies for the American armies in the field was shipped from Bristol, and the achievements in connection with these operations were fully appreciated by the American authorities concerned. Well equipped as the port was in September, 1939, it required some further facilities in order to handle the increased traffic necessitated by the changeover to war conditions. The management therefore hurried forward to completion, in spite of the many difficulties of labour and materials, the construction of the extension of the Royal Edward Dock to provide four additional deep water berths, a new wharf at the Oil Basin and the reconstruction of a further oil berth. These works proved of great value in handling additional traffic. Many other works and improvements and additional facilities were undertaken, some as Government grant-aided schemes. The most notable were the construction of a tidal oil berth and jetty at Avonmouth and an additional deep-water berth and quay and sidings at Portishead Dock.

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Contributory Negligence

As already noted on page 152 of *The Railway Gazette* of February 16, 1945, the Law Reform (Contributory Negligence) Bill introduced in the House of Lords early in the year proposed an important change. At present in the case of injury by an accident on land no damages are recoverable by a plaintiff from a negligent defendant if the plaintiff has in the slightest degree contributed to such accident. The Bill provides, in effect, that where injury resulting from an accident was due to the negligence of both parties, plaintiff's share in responsibility shall be taken into account in assessing damages. It also excludes actions between workmen and employers on the ground that to include such accidents in the Bill, pending the contemplated comprehensive scheme of workmen's compensation reform, would not be to the advantage of either workmen or employers. This exclusion followed the recommendations of the interim report (Cmd. 6580) by the Home Office Departmental Committee on Alternative Remedies (Contributory Negligence) relating to Workmen's Compensation. In the recently issued second interim report (Cmd. 6642) of the Committee, however, a different view is presented. It is recommended: (i) that actions between workmen and employers should not be excluded from the Bill; (2) that the amended law should be applied immediately to such actions, and that its application thereto should not be postponed until the repeal of the Workmen's Compensation Acts; and (3) that Section 29 (2) of the Workmen's Compensation Act, 1925, should not be amended so as to give the workman a right to elect to claim compensation after he has recovered judgment for damages.

* * * *

Cost and Works Accountants

A good deal of attention recently has been directed to the important part that costing will play in post-war industrial organisations. Many accountants have realised the importance of specialised training leading to a costing qualification, but it is not realised as widely as it should be. Mr. Harold Wilmot, Managing Director of Beyer Peacock & Co. Ltd., who, as briefly recorded in our last week's issue, has been elected President of the Institute of Cost & Works Accountants for the third successive year, pointed out at the annual meeting of the Institute that the work of the Cost Accountant is far more than the analysis of expenses. In industry, management should know not only the details of cost but should have the means of assessing those details in terms of efficiency. In other words, the true function of the Cost Accountant is interpretive and the measure of his success is the degree in which the work he does assists management to make right decisions and to formulate wise policies. To do this, the Cost Accountant must be a specialist who combines with his knowledge of accounting principles and practice a wide comprehension of the work of the organisation in terms other than those which merely record and analyse the expenditure of pounds, shillings, and pence.

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Educating the Young Idea

Many American railways to-day are making serious efforts to stir up youthful interest in their achievements, and to enlist a support on the part of the younger generation which will continue later on in life. Probably our own Great Western Railway was the first to develop this valuable propaganda line, with its well-produced handbooks such as the "10.30 Limited," its excursions to Swindon Works, and in other ways, and it is to be hoped that further developments of the same kind may take place in Great Britain after the war. Meantime the Southern Railway of the U.S.A. has produced a "Pupil's Railroad Kit," in response to numerous requests from children for pictures and information about the line. This contains a letter from the railway president, a book of pictures with captions, a dictionary of railway terms, an explanation of railway whistles, coloured representations of Southern streamliners, a brief history of the railway, and other interesting matter. The Association of American Railroads has also taken active steps in the same direction. In 1942 it issued a "Teacher's Kit on Railroad Transportation," containing 56 pictures with a descriptive booklet and a teacher's manual, intended for juniors, but actually used widely in higher grades, and even in teachers' training colleges as a demonstration of possibilities in the unit method of instruction. Other A.A.R. publications have been a 72-page booklet entitled "Railroads at Work," a "Quiz on Railroads and Railroading," now in its third edition, "Railway Literature—a Bibliography," first issued in 1937, and since then twice republished in a thoroughly revised form, and, lastly, a list of railway films available for showing at schools.

* * * *

Railway Uses for Aluminium

There is little doubt that in the future many more railway uses will be found for aluminium than has ever been the case previously. To meet war needs, the production of aluminium has been expanded to such a degree that at the present time the United States has found it possible to close several of the Government-owned aluminium plants, and is still producing at a rate that is three times the pre-war peak figure. In disposing of surplus aluminium stocks, the U.S. Navy has utilised aluminium sheets for such purposes as the roofs and sides of warehouses. The light aluminium alloys, however, are likely to have the widest railway uses. One of the latest that has been developed has a yield strength that is almost twice that of the older alloys, and an ultimate tensile strength of over 36 tons per sq. in. Already the Chicago, Burlington & Quincy and Missouri Pacific Railways have put in service bogie hopper wagons of aluminium alloy construction, and the Great Northern Railway has just completed a bogie box wagon with aluminium body. Although aluminium offers considerable advantages over steel in its resistance to corrosion, the most valuable asset in rolling stock construction, of course, is the lightening of weight that the former makes possible, and already it has been put to use on a considerable scale in the building of coaching stock and in such locomotive details as cab sides and roofs. There are many attractive possibilities along these lines.

* * * *

American Railway Accidents in 1944

Although it might appear, from the number of United States accident reports, that collisions and derailments in that country are fairly frequent, this accident record must be viewed, of course, in relation to the size of the American railway system, which incorporates roughly one-third of the world's route mileage. In its 58th annual accident report, giving statistics for the year 1944, the Interstate Commerce Commission praises the railways of the United States for the fact that, despite the unprecedented increase in traffic and the large proportion of unskilled labour that is being used in war conditions, the accident roll has been kept at so moderate a level. Nevertheless, there has been a considerable increase over the peacetime average. In 1940, 7,106 accidents were reported, and in 1943 16,061, increasing the rate from 5·43 to 8·87 accidents for each million locomotive-miles run. In the first six months of 1944 the rate remained roughly unchanged, with a total of 8,203 reported accidents, or 8·99 to one million locomotive-miles. In 1944 accidents due to failure of equipment increased by 1·08 per cent. over those in 1943, and those due to defects in or improper maintenance of structures by 2·52 per cent.;

accidents due to negligence of employees were 2·10 per cent. up. In the first six months of 1944 2,229 persons were killed and 28,891 injured—a decrease of 5·11 per cent. and an increase of 0·43 per cent. respectively compared with 1943. But conditions are still far safer than those in the first world war; in 1917 10,087 persons and in 1918 9,286 were killed in all descriptions of accident, including those due to trespassing and at level crossings, as compared with 5,337 in 1942 and 5,051 in 1943.

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G.W.R. Diesel Cars

With the steadily deteriorating coal output, coupled with the enhanced price of locomotive coal, which has almost doubled since the outbreak of war, it is probable that increasing attention may be paid by the railway companies to the greater utilisation of diesel traction. A number of diesel passenger and parcels services have been run on the G.W.R. throughout the war, and during the summer service this year it is estimated that they will run over 3,500 miles a day, of which 20 cars (two of which are twin sets) will operate about 3,300 miles on passenger services and two parcels cars will cover about 200 miles daily in short trips in the London area. These cars originally were introduced for the purpose of developing business in areas and between points where the traffic was somewhat sparse, with the intention that they should be replaced by steam trains when circumstances justified this step. Further developments in connection with the design and tractive effort of the cars were interrupted by the outbreak of war, but we assume these will be resumed as soon as the availability of labour and materials permits. It is probable also that the railways generally will give further consideration to increasing their stock of diesel locomotives for shunting, and possibly other, purposes, having regard to the present level of costs generally.

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Early Spanish Signalling

A recent issue of *Ferroviarios*, the staff journal of the Spanish National Railways, contains an article by Señor Camilo Cendan on the development of signalling in Spain. Not until September 22, 1882, was interlocking introduced in that country. On that date the then Tarragona, Barcelona & France Railway put an 18-lever frame in service at its junction with the Northern Railway's line to Saragossa. Progress was slow and after other countries had fitted all their lines, non-interlocked stations were frequently met. Mechanical installations were provided by British and German firms and both rod and double-wire equipments were used. The key system introduced in 1895 by the French engineer Bouré, an officer of the P.L.M. railway, who died as recently as 1937, obtained considerable favour in Spain, especially for single-line stations. In 1892 the hydraulic-power system appeared at the Atocha Station, Madrid, of the M.Z.A. line, and at the Norte terminus of Principe Pio, the French M.D.M. route system, with hydro-pneumatic operation, was used. Another French route system, the Bleynie-Ducousso electric, was used at Madrid and Pueblo Nuevo, and an individual lever system, also electric and of French design, at Barcelona, with a frame of 103 levers, the largest in the country. The American G.R.S. and German A.E.G. power frames are also in use in several places and the Ericsson system recently has been introduced at Santiago and Corunna.

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W.D. Beyer-Garratt Locomotives for the Far East

Part of the forward planning for the Far Eastern campaign has entailed arrangements for the necessary engine power to deal with the exceptional traffics on the various lines of communication. A great deal of the mileage in India and all the railways in Burma, Federated Malay States, Siam, and Indo-China is of metre-gauge and a considerable mileage of heavily-graded sections is encountered. To meet this particular work the War Office, through the Ministry of Supply, ordered a number of Beyer-Garratt locomotives to operate on 50-lb. track, that is, with an axleload of 10 tons, and these locomotives have been designed and manufactured by Beyer, Peacock & Co. Ltd. The engines are of the 4-8-2 + 2-8-4 wheel arrangement and a 4-ft. wheel has been selected, thus giving the locomotives general purpose characteristics. Their tractive effort of 43,520 lb. at 85 per cent. boiler pressure makes them the most powerful metre-gauge locomotives in the Far East. The locomotives are fully described and illustrated elsewhere in this issue and provide a further example of a War Standard Beyer-Garratt and of the numerous types evolved by the British locomotive industry during the war to meet the various demands of transport. Altogether 44 Beyer-Garratts have been sent overseas to the Far East theatre of war which, it is interesting to note, equal in tractive effort 80 of the I.S.R. Standard "Y D" Class Mikado type of the same axleload. This comparison brings home the great saving in the number of trainsmen required to move a given tonnage and the increased capacity of the line brought about by the use of these engines.

Railways and the Nation

THE Labour Research Department has just issued a 31-page booklet, "Railways for the Nation,"* which discusses the financial and operating record of the railways and claims to present a case for a nationalised and co-ordinated transport system. The booklet is divided into three sections, the first of which is historical and deals with the early days of railways up to the amalgamations in 1921: the second deals with the present position of the railways and the third with the railway companies' and the Labour movement's post-war plans.

The booklet follows the usual lines of the Labour Party criticism of the railways and contains many half-truths which distort the facts. For example, the cost of building the British railways per mile is quoted as being four times higher than in the United States, without any reference being made to the totally different conditions or the fact that the U.S. railroads have been made free grants of land totalling 180 million acres—more than three times the entire size of Great Britain!

The booklet states that the rapid growth of road transport after the last war broke the railway monopoly, but refrains from pointing out that the railways are bound in every conceivable way by Parliament which, however, has continued to allow road hauliers almost unrestricted freedom in the matter of charges. Further, Parliament, supported by the Labour members for several years, denied the grant of facilities to the railway companies even to operate road transport. The booklet then argues that between 1928 and the outbreak of this war the railways did not attempt to meet road competition by improving their services, but set about re-establishing their monopoly. The first statement is a travesty of the facts, and the second is equally untrue.

Turning to the present position of the railways, the booklet claims that the companies' service to the public was marked by anarchy in the national transport system alongside restriction of facilities; a level of charges almost higher than anywhere in the world and a failure to adopt more recent technical developments—a thoroughly sweeping statement! We agree entirely with the remark that the struggle between the railways and the roads has produced an irrational and uneconomic use of the transport facilities available, but would remind the authors that no Government could afford to nationalise the British railways and leave them at the mercy of the present unrestricted road competition. Parliament—and certainly not the railways—is to blame for the present unsatisfactory position and the Minister of Transport promised before the war to take steps to remedy this injustice.

The statement that during the war the Government allocated traffic according to what each section of transport was best equipped to do, is a travesty of the facts and, in any case, is no criterion to peacetime activities. In connection with the Abercrombie proposals for the replanning of the County of London the booklet argues that just as the companies have restricted other forms of transport, they now seek to hamper town planning. This grotesque statement has been made simply because the railways had the temerity to point out that the proposed interment underground of large sections of line in the county of London would involve great engineering difficulties and an astronomic expenditure. Any thinking man must surely agree with the railway companies' comment.

As might be expected, the old bogy of "watered capital" is again trotted out and, in response to the railway argument that the replacement cost of their assets is now infinitely greater than the capital expenditure shown in their accounts, the booklet suggests that nobody would want to replace some of the assets—the duplicated lines for instance. This is an unfortunate example, as these very lines have proved of the greatest assistance during the war as they have helped in providing alternative routes which have enabled the railways to deal efficiently with the highest traffic in their history, despite the serious effects of damage caused by enemy air raids.

There are further half-truths in the paragraph headed "Government Credit" wherein it is alleged that the Railway Finance Corporation and the London Electric Transport Corporation were set up in 1935 to raise money for the companies because their credit was too poor to allow them to raise it for themselves. As shown in our comments under this head on the railway companies' booklet, this statement is without foundation. The booklet also states, correctly, that the railway companies were

* "Railways for the Nation." Labour Research Department, 45, Lincoln's Inn Fields, W.C.2. Price 6d.

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relieved of 75 per cent. of their local rates under the Local Government Act, 1929, but it is completely wrong in stating that only three-quarters of this sum has to be passed on to traders through the medium of railway freight rebates. In fact, the whole has to be passed on in the shape of rebates on traffic nominated by the Government, whereas in other industries the whole of the amount is retained by the industry for its own purposes.

The companies' post-war plans are dismissed as inadequate because there is no mention of (*a*) electrification, or (*b*) canteens! As to electrification, the facts are that no matter whether the railways are State-owned or not, electrification can be justified only (*a*) where the existing traffic can be worked more economically by this means; or (*b*) where it would be paid for by greatly increased traffic. As to canteens, there was little demand for these before the war. It is only since the war and the introduction of food rationing that the demand for them has increased and since 1939 the companies have opened 373 canteens and others will shortly be opened. The booklet grudgingly admits, however, that if the companies carry out their plans they would certainly increase the efficiency of their undertakings and reduce their working costs.

On the matter of railway charges, the booklet argues that the railways are attempting to raise the general level and quotes in aid an extract from the speech made by Sir Charles Hambro at the G.W.R. annual meeting in March last. He then said that on the quantum of traffic carried in the years immediately preceding the war, the pre-war level of the charges would have to be raised by about 50 per cent. to cover the increased costs and yield the pre-war revenue, and by about 60 per cent. to yield the standard revenue. This is an indisputable fact, but it is criticised by the booklet because it did not take into account the possibility of increased traffic. This comment is quite unjustified because the sentence immediately preceding the statement which is quoted said " Equally, our receipts in the years before the war cannot be regarded as indicative of the probable post-war earnings."

When, however, we turn to the Labour Movement's post-war plans, we see clearly that the demand for nationalisation springs largely from the hope that the workers will secure increased wages and pensions. The question of pensions is dealt with in the railway companies' pamphlet and it is abundantly clear from the published proposals of the railway trade unions for increased wage levels that their claims could only be met by a very heavy increase in railway charges. Labour proposes that each section of the nationally-owned system should be run by a public board, with a national transport authority to co-ordinate the whole. Further, to secure full workers' participation in the running of the industry, it proposes a system of consultative councils at all levels, works, regional, sectional, and national, organised by the trade unions. Finally, it suggests that compensation to the railway stockholders should be based on a reduction of the pre-war revenue on the ground that it was only obtained from the gross exploitation of the railwaymen and the public. Perhaps wisely, however, the booklet ends with the naive statement that it is not within its province to lay down how the " reasonable net maintainable revenue " which the Labour movement takes as the basis of compensation, should be arrived at.

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The Railways: Questions and Answers

The pamphlet issued by the British main-line railway companies entitled " The Railways: Answers to Questions and Statements," which was reviewed in our columns last week, has been followed by a 30-page booklet* bearing the same title, which deals much more comprehensively with the question of railways and State-ownership. The booklet has been prepared to give Members of Parliament and other interested persons the facts regarding questions which have been asked and statements made concerning the railways on such matters as stagnation; lack of co-ordination, efficiency and economy; the duplication of facilities and the level of charges; the use of steam and other power; the size of wagons; the shabby appearance of station and other amenities; the inadequate wages and poor conditions of employment of their staff; and the need for the companies to be subsidised because of their inability to raise capital for modernising their undertakings.

This is a somewhat formidable list of charges, but they are answered most effectively in a series of 44 detailed questions and answers grouped under five main headings. The first of these covers seven questions bearing on the efficiency of the British railways as compared with State-owned lines, and deals with such matters as inter-company competition, duplication of services, under-worked branch lines, the criticisms of the Royal Commission on Transport (1931), diesel-electric passenger services, the modernisation of stations, and the reasons for the Government taking control of the railways on the outbreak of war. A second series of seventeen questions is directed to the point as to whether the railways are run for private profit and without regard for the public interest.

The answers to these questions deal with a number of misconceptions in the minds of those who urge the principle of State ownership as the panacea for all ills, and make the telling point that only 29 per cent. of the world's State-owned railways are self-supporting. The total surpluses on these lines for the year 1938 converted to sterling at pre-war rates of exchange, were just over £8 millions, but the total deficits on the working of the remaining State-owned lines exceeded £90 millions, the whole of which had to be borne by the taxpayers. They also controvert, in forceful language, charges that railway directors and managements place their stockholders' interests before those of the public; complaints as to the antiquated design, dingy and dirty appearance of their station premises and rolling stock; and deal effectively with statements that State ownership and efficiency are necessarily synonymous.

The opportunity is also taken to dispute the claim, which is frequently made, that the London Passenger Transport Board is an example of how efficiently a public utility can be operated under State ownership. Seven questions cover suggestions that industry and the country's export trade would be better served by State ownership. The answers to these give a good deal of information as to the manner in which the companies have not only met, but have anticipated the requirements of industry; correct some misunderstandings as to the co-ordination of transport; adequately deal with suggestions that British trade is handicapped by the high level of rates and charges; that the railways have failed to build high-capacity wagons and, having ruined canals, now seek to retard the development of air services so as to bolster up rail transport.

Three questions deal with the suggestion that the experience of other countries proves the value of State ownership, and emphasise the political reasons which prompted the adoption of this principle by various Continental countries. Attention is also drawn to the experience in the United States where, when the railways were taken over by the Federal Government in the last war they accumulated a deficit of about 2 million dollars a day, whereas in this war, under private ownership and management, their financial position is such that they are paying taxes to the Federal Government at the rate of 4 million dollars a day.

Six answers deal with charges that the capital structure of the railways prevents progress and efficiency, and controvert statements that the railways suffer from " watered " capital; are over-capitalised; will be unable to raise capital for modernisation purposes; and that the State already has been forced to come to their assistance in this respect. Finally, the allegations that railway staff and workers would fare better under State ownership are dealt with in a series of four answers, which makes it clear that the sweeping generalisations used in certain political circles are not supported by the facts.

It will be seen from this very brief summary that the booklet covers a very wide range of topics and its authors are to be congratulated both on the information which the booklet contains and the very able manner in which the facts against the adoption of the principle of the State nationalisation of British railways have been presented. In this connection we recall that Mr. Herbert Morrison, when opening the Labour Party Conference at Blackpool on May 22 is reported to have said: " In our electoral argument it is no good saying we are going to socialise electricity, fuel and power, or transport, because it is in accordance with Labour Party principles. The electorate will expect to be shown the case why we want to do it and how the public interest will be advantaged by it." This is a very candid statement and, so far as the State ownership of railways is concerned, we might add that a large proportion of the electorate will also expect to be told just how this is to be accomplished and to be informed precisely how the State concern will be managed—subjects on which information has so far been conspicuous by its absence.

Returning to the booklet, we think more room might have been found for reference to the tremendous burden carried so successfully by the railways during the war, thanks to their pre-war

* Issued by the British Main-Line Companies, 22, Palace Chambers, London, S.W.1. Free on application

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policy of improving their undertakings often at the expense of their stockholders, and to some details of the companies' post-war plans.

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Railway Rate Changes in the United States

AS was briefly recorded in our June 1 issue, the Interstate Commerce Commission has called for increases in the freight class rates charged by the eastern lines of the United States and a reduction by the southern and western lines. This is part of a long-range programme of the Commission to bring about uniformity of classification and of a prescribed scale of class rates. In general, the Commission has decided in favour of a 10 per cent. increase in class rates on the eastern lines and a decrease of 10 per cent. on the southern and western lines, and has ordered that these adjustments are to be effective at the end of August. The adjustments are described as interim changes pending the establishment of a uniform freight classification to be effective throughout the country. The railways have been given 90 days in which to indicate whether they will undertake to prepare and submit a uniform classification for the whole country for the Commission's approval. Should they decline to undertake this task the Commission retains jurisdiction to make any further order as it may think appropriate.

The decision of the Commission, which was made public on May 19, arises from two investigations on which it has been engaged for some time, namely, Class Rate Investigation of 1939, and the Consolidated Freight Classification Investigation. It represents the views of a majority of 9 of the Commission's 11 members and it appears to have aroused considerable apprehension and controversy in the United States. Our American contemporary, the *Railway Age*, has given a number of views by traders and railway spokesmen on the Commission's report, and in general these are unfavourable to the projected changes, and suggest that the new basis has been drawn up on political rather than commercial considerations. The report itself maintains that the method of distribution of the rate burden between types of traffic in southern, south-western, and western trunk line territories has resulted in rates so high that they have prevented the free movement of traffic. This it suggests is proved by the numerous lower and exception commodity rates under which the great preponderance of the traffic moves and which produce most of the railway revenues in those territories.

Freight rate structures in the United States are composed of (*a*) class rates, governed either by the ratings in a standard freight classification, or by exceptions to the classification (exceptions are of two types, those that transfer the rates on an article from one standard class rate column to another, and those that use intermediate columns in the system of class rates not assigned to standard class); (*b*) "Column" rates which apply to specific commodities or groups of commodities and thus assume the form of commodity rates, but follow the contour of class rate scales by being established as fixed percentages of the first class rates; (*c*) commodity rates which apply to particular commodities but are not related by definite percentages to the first class rates. "Exception" rates and "column" rates which in some instances apply throughout a particular territory and in others to limited portions of the territory, or between particular points usually are designed to fit the special conditions relating to the transport of a single commodity or group of commodities.

For the entire United States a study conducted for the Commission indicated that 4·1 per cent. of the tonnage handled moved on class rates, 10·7 per cent. on "exception" rates, and 85·2 per cent. on commodity rates. Of the total revenue 6·3 per cent. was yielded by traffic moved on class rates, 16·1 per cent. by that on "exception" rates, and 77·6 per cent. on commodity rates. The great preponderance of traffic is transported on commodity rates. No changes in existing "exception" rates or "column" rates are contemplated in the Commission's finding.

An analysis of the evidence submitted to the Commission with respect to less-than-car-load rates and costs was found by the majority to prove unmistakably that less-than-car-load shown was not bearing its proper share of the costs of transport—in fact excluding wartime loading was not yielding on the average its out-of-pocket costs plus constant expenses solely related to this traffic plus the cost of collection and delivery. At present, all classifications provide for a flat minimum charge of 55 cents on each less-than-car-load shipment, but the Commission has directed that this charge should be increased to 75 cents.

For the last twelve years the average revenue per ton-mile earned by the U.S.A. railways has been less than 1 cent and it is difficult to believe that railway rates have prevented the expansion of industry. A mileage rate parity cannot by itself put traders in different parts of the country on an equality in all markets as the traffic which moves the longer distance must bear a higher charge. The decision of the Commission may therefore not be of much assistance to the people in the southern and western states who have been agitating for a revision of the existing tariffs. The great bulk of their traffic will continue to move on rates which will not be altered. The situation is a most interesting one and we propose to report further developments in due course.

* * * *

Tanganyika Railways & Port Services

THE report for the year 1943 on the Tanganyika Railways & Port Services which we have received from Mr. A. E. Hamp, C.B.E., the General Manager, was bound to be on a scale much reduced from pre-war statements. All essential statistics and accounts, however, have been included. We hope that it will soon be possible for a return to be made to the style of the 1939 report with its accompanying map. The length of railway operated by the Administration has undergone no change during the war, and is 1,376 miles on the metre gauge. Two sections, with no physical connection between them, make up the system. One section is the Central Line of 775 miles, running from the port of Dar-es-Salaam to Kigoma on Lake Tanganyika, with two branches—Tabora to Mwanza on Lake Victoria (235¼ miles) and Manyoni to Kinyangiri (93½ miles). The other section is the Northern (or Tanga) Line of 272 miles from the port of Tanga to Kahe, Moshi, and Arusha. At Kahe physical connection is made with the Kenya & Uganda Railways.

Road services are worked by the Administration and these consist of the 178 route miles from Morogoro on the Central Line to Korogwe on the Tanga Line, which service was inaugurated in 1940, and the Southern Highlands service of 861 route miles inaugurated in January, 1942. The Administration also works a steamship service on Lake Tanganyika, a launch service on Lake Victoria, and the Kilombero River Service. A ports service is also included in its activities. In the accounts the financial statements relating to railways, road and steamer services and certain extraneous matters are grouped together, showing gross receipts of £1,097,234, expenditure £775,448, and net receipts £321,786. The ports service gave gross earnings of £156,519, but there was a deficit of £1,170 after providing for working expenses and debt charges. Figures in the accompanying table relate to railway operations, with the exception that the last three cover the combined results of railways, steamship and road services:—

	1942	1943
Passengers	800,452	1,172,808
Revenue goods, tons	303,259	333,428
Revenue goods, ton-miles	72,505,414	81,154,356
Train-miles	844,241	981,371
Average haul, miles	239	243
Operating ratio, including renewa's...	52·6 per cent.	69·6 per cent.
	£	£
Coaching revenue	217,903	342,941
Goods traffic revenue	638,132	613,785
Gross receipts	882,109	985,259
Working expenditure, including renewals	463,868	685,422
Balance of revenue account	463,913	327,501
Interest and redemption charges ...	287,893	279,210
Surplus	176,020	48,291

Expenditure on renewals was £100,000 in 1942 and £200,000 in 1943. Excluding renewals, the operating ratio was 41·2 per cent. in 1942, against 49·3 per cent. in 1943. The same operating difficulties occurred as in 1942, due to the continued high level of traffic and the steady decline in average staff efficiency caused by the loss of trained staff, the existence of inferior salary conditions as compared with those offered by the neighbouring colony, and increasing sickness. In the locomotive department there was a considerable increase in total expenditure, but against this there was an appreciable increase in miles run. The higher cost per engine-mile was due mainly to the use of more coal than wood fuel and an increased cost of coal. The out-turn of locomotives, carriages and wagons showed an increase over 1942 and speaking generally, the time out of traffic was reduced. Maintenance of track has been continued to a standard which permits good running at the maximum speed in force. Road services expanded considerably with the inauguration of the Southern Highlands route and produced a gross revenue of £98,366, at a total direct expenditure of £80,416, including £20,000 for renewals.

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XUM

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Service

Canada House, Norfolk Street,
Strand, W.C.2. June 20

To the Editor of The Railway Gazette

Sir,—On Ipswich Station recently, *en route* for London, I thought I had a few minutes to spare. I therefore left my compartment, and in it my despatch case (containing details of my afternoon's work in that town), my hat and coat. On my return to the platform the train (which was an "extra") had departed, taking my precious despatch case with it.

The stationmaster to whom, hurriedly, I explained by predicament, assured me that all would be well, and that he would arrange for my despatch case to be handed to me on my arrival in London. After a few minutes he returned to me, now seated in the scheduled train, and smilingly said that if I would put my head (mark you, hatless) out of the window as the train drew into Colchester Station, the despatch case would be handed to me there.

Trustingly I did as suggested and, as if from the blue, a porter stepped up and confidently handed me my belongings.

I need hardly add that this efficient service reminded me forcibly that my tonsure is very large indeed.

Yours truly,
A. I. TODMAN

Railway Finance

London. June 23

To the Editor of The Railway Gazette

Sir,—I note that in your June 22 issue you quote Sir William Wood as having pointed out that since 1923 the railway companies have spent £450,000,000 on modernisation and equipment and his view that there would be no difficulty in continuing to obtain funds for expenditure which was economically justified. I would hesitate to cross swords with so well-known a financial expert as Sir William Wood, but I am wondering whether he is not putting it a little high when he says "no difficulty in continuing to obtain funds." No doubt the railway companies could obtain money through the ordinary operations of the market by issuing debentures, but this surely would have to carry interest in the neighbourhood of 4 per cent., if present prices of railway securities may be taken as a guide.

The issue of ordinary or preference stocks at the present time, I should imagine to be right out of the question, for the yield on the best of these now on the market is about 8 per cent.

The issue of new debentures by the companies would place still further service to be made in front of the long suffering ordinary and preference stockholders of the railways, and at the relatively high rates of interest which would have to be paid, would cause a further setback of stocks which are already more than sufficiently depressed.

The Treasury on the other hand could raise the money at 2½ per cent. There would seem no good reason why this course should not be adopted and the money loaned to the railway companies at very little more than that rate. That has been done on previous occasions when the railways in turn guaranteed the Government by the issue of debenture stocks as security, and while I agree with Sir William Wood that it would be untrue to describe this as a State subsidy of the railway companies, it would at least provide a reasonable means of financing modernisation on lines, which could not fail to be of benefit to the nation as well as to the companies.

Yours faithfully,
EX-STOCKHOLDER

Wagon Repairs

Middlesex. May 27

To the Editor of The Railway Gazette

Sir,—I am a transport clerk who just over a year ago obtained Sunday spare-time work (8 hours) through the Bankers' Guild scheme, which, incidentally, has now ceased to function, on wartime supposedly unskilled wagon repairs for the L.M.S.R. at a large London junction. My service since has been almost continuous. When I signed on I had never used a cold chisel, nor had I even heard of "cutting a nut" nor would I even have thought of inserting a washer on spanner jaws to "pack" a utility nut. These and many other wrinkles have I learned from one or two regulars. The work is extremely dirty—I have never seen any bank clerks or indeed any other black-coated workers—but the jobs are extremely varied, sometimes light, such as plating a split plank, sometimes very heavy, such as fitting new buffer castings, drawbars, axlebars or levering back into position road-rail containers which have slipped a couple of feet over the end of a truck in transit.

The work has been often tiring to me, but very interesting and, well—with the very minimum of worn old tools supplied, is it so unskilled? Believe me, sometimes a little extra brain power can conserve a deal of brawn power. My mates, nearly all manual workers or machine operators, have never "taken the mike out of me," they've just accepted me and now I hope and believe they forget I am just one of those "pen-pushers." They and the charge hands are a fine lot of fellows.

Should anyone in a managerial capacity in the repair world chance to read my words, I would ask him to consider these one or two following points from a complete outsider. Why is it that there is not more co-operation between the various sections on the operating side? For example, it seems that a crane or horse might do some jobs in minutes which are actually performed by a gang of six or so working one whole day by improvisation in the use of ropes and packing. The department concerned may not own a crane and seems completely afraid to attempt to borrow one from another. Why in this part-time repairing business is there not a little more system? For example, half-a-dozen or so bags of nuts and bolts are lifted from a tool box each Sunday to be thrown on a muddled heap on the floor and at the end of week are re-bagged by hand. Some rough shelving and a little initial sorting would soon develop into a sub-store and time would be saved.

I append my name and address, but for personal reasons do not desire them to be divulged.

Yours faithfully,
BLACK-COAT

Shortage of Locomotive Repair Staff

13, Freshfields Avenue,
Upminster, Essex. June 22

To the Editor of The Railway Gazette

Sir,—Mr. Evelyn Walkden, late M.P. for Doncaster, has stated that large numbers of locomotives await repairs in engine sheds, because of shortage of labour, while Mr. Butler, Ministry of Labour & National Service, claims that this work has for long received a very high preference in the allocation of labour.

From my own experience neither of these statements stand close investigation. To quote my own case, I served an apprenticeship at Eastleigh Locomotive Works followed by 6½ years' experience as a running shed foreman in Persia and South America. Having a desire for employment on the railway I wrote to a large L.N.E.R. depot in the Eastern counties, and I was informed that there were no vacancies at that time but my application would be recorded.

A year later—September, 1944—I again applied but there were no vacancies available; at the same time I approached a National Service Officer in this district on the question of my release from my present employment, with a large motor manufacturing firm, stating that I could be more usefully employed on the railway than at my present work which could, and was, performed by a trainee. Owing to the objection of my firm, release from their employment was not granted.

Local Ministry of Labour offices are chiefly concerned with their own district and apparently there is no nation-wide campaign to secure suitable men for—according to Mr. Butler—the high priority of railway work.

Therefore—under the existing system—we who are qualified and desire to work on the railway must await the repeal of the Essential Works Order.

Yours faithfully,
G. B. DREW

Revolving of Locomotive Boilers during Repairs.—A letter from Mr. A. L. Jones, of Palestine, which was published in our June 1 issue, described a means of revolving boilers during repairs by the use of sling gear. A correspondent who has a long experience of locomotive repairs in this country endorses the statement contained in a Letter to the Editor, published in our June 8 issue, that there are not many locomotive boiler shops in Great Britain where such a method would be feasible, as in most cases, the cranes installed have single crabs. He considers also that the fixing of the sling, which involves wrapping one end one and a half times round the boiler is not a very expeditious operation, and in his view Mr. Jones has overstressed the need for very accurate angular setting. Generally, a boiler being repaired is required on the quarter positions only, which may be obtained very largely by having the correct packing available for locating it as it settles down. Very little difficulty is experienced at the larger locomotive works in turning boilers, and, indeed, in some cases the crane operation is now controlled by women with very little difficulty.

The Scrap Heap

Another sure sign that the Government is controlling the peace is the acute shortage of it.—*From "Charivaria" in "Punch."*

* * *

BRITISH AIR TRANSPORT

It is difficult to gather what the Government's policy is really going to be. They seem now to be trying to placate every interest—including the Scottish Nationalists.

* * *

OH, MR. PORTER!

Police witness at North London recently. She visits Euston Station and associates with the porters there.

The magistrate (Mr. Daniel Hopkin): That's not evidence. Porters are perfectly respectable gentlemen.—*From "The Evening News."*

* * *

BIRTHDAY HONOURS

From the list of the Birthday Honours it seems that the allocation of Honours amongst the four main-line railway companies is as follows:—

	G.W.R.	L.M.S.R.	L.N.E.R.	S.R.
C.B.E. ...	—	—	1	—
O.B.E. ...	1		1	2
M.B.E. ...	1	2		4

* * *

WHO GETS THE MONEY?

Travellers in overcrowded trains recently have been heard to condemn the railways for making undue profit at the expense of the discomfort of travellers. It is certainly not realised by the generality of the public that, in fact, the railway companies do not benefit by squeezing as many passengers as possible into a train or that much of the money contributed in fares goes directly to the Government. The following table shows the net revenue of the controlled railways, the share retained by the railways, and the amount which goes to the Government in respect of each of the last four years:—

—	Net revenue of pool	Railways	Government
	£	£	£
Year to—			
December 31, 1941 ...	65,125,000	43,469,000	21,656,000
December 31, 1942 ...	89,126,000	43,469,000	45,657,000
December 31, 1943 ...	105,568,000	43,469,000	62,099,000
December 31, 1944 ...	90,256,000	43,469,000	46,787,000
	350,075,000	173,876,000	176,199,000

The goodwill of the public to the railway companies will be of increasing importance in the postwar years, and they might do worse than issue a poster showing where the money goes, and explain to the public, that, in fact, their discomfort and fares alike are a form of taxation.

* * *

REGULATIONS

Malefactors condemned to a prison sentence are governed in their behaviour by a mere 214 regulations. We, the free and law-abiding citizens, are subject to 10,000, all passed since the war began. Further, to avoid transgression, we must be familiar with 220 new Acts of Parliament and the judgments given in 300 leading cases.

Now ten thousand regulations, either contradictory or writ in language no man save the Official can understand, need an army of officials to enforce them. That is the true meaning of the term "police state" which Mr. Churchill exposed again last night as the real aim of the Socialist Party. Except that if the Socialists really managed to "drag their wavy Utopias across the practical paths of need and duty," the present colossal number of regulations would be doubled or trebled.—*From "The Evening Standard."*

* * *

The 1,378,802 telephone calls dealt with by the L.M.S.R. "At your service" girls at Euston Station last year was a record, but, anticipating even more travel inquiries from the public during this summer, six additional lines have been made available. The number of incoming post office lines into Euston is now 60.

* * *

KEEPER OF L.P.T.B. PURSE

Mr. H. C. Davy, Treasurer of London Transport since 1937, who retires this month, was appointed Assistant Treasurer of the Underground Group of Companies 32 years ago. Since then the companies and their successors, the Board, have received and paid out again more than a thousand million pounds. Largest single item received was five and a quarter million pounds: smallest was a cheque for a penny—sent in by a wag in payment of a fare not paid at the time of travel. That cheque was not paid into a bank: it lies in the Treasurer's Office still—as a curiosity.—*From "Pennyfare."*

* * *

100 YEARS AGO

From THE RAILWAY TIMES, *June* 28, 1845

SWEDISH GENERAL RAILWAY COMPANY (First Division). Stockholm and Gottenburg.—CAPITAL £5,000,000 sterling, in shares of £20 each, of which a certain number are reserved for Sweden; DEPOSIT 2s. 6d. per share; to cover all preliminary expenses for surveys, &c.

The object of this Company is the construction of a good trunk line of railway from Gottenburg to Stockholm, with important Branches. The engineering department will be under the sole management of Charles Vignoles, Esq., F.R.S., and M.R.I.A.

A negociation is in progress to obtain concessions from the Swedish Government.

A detailed prospectus, with a list of influential names, will shortly be published; in the meantime, applications for shares to be addressed to William Jones, Esq., 2, Shorter's Court, Stock Exchange, where the necessary forms may be obtained.

"How does that one feel, Sir?"

[*Reproduced by permission of the proprietors of "Punch"*

RAILWAY QUESTIONS AND ANSWERS

Statement: In the years between the wars, the railways were inefficient, compared with the Post Office, which is state-owned and state-controlled.

Answer: It is impossible to compare two things which are fundamentally different; there is no similarity in these two services. Moreover, the Post Office is principally dependant on railways for the inland transport of letters and parcels. Under the Railways Act of 1921, the Railway Rates Tribunal is required to examine annually the efficiency and economy of the operation and management of the railways. The proceedings of the Tribunal are held in open court and any interested party is free to examine the railway witnesses. On each occasion the Tribunal has found, without qualification, there has been "no lack of efficiency or economy in the management." Without efficiency the railways could not survive the keen competition which they have to meet from road transport, coastwise shipping and canals, and could not have met in full all requirements of the Government during the war, as they have done.—*From "Answers to Questions and Statements," issued by the British Main-Line Railway Companies, 22, Palace Chambers, London, S.W.1.*

RAILWAY GLOSSARY

English railwaymen have been learning things from the Americans who have been using our trains. Many U.S. soldiers in this country were railwaymen in civilian life, and plenty of them have gone out of their way to talk trains with drivers over here. As a result our railwaymen are beginning to speak their language.

I am told that an engine is now a "kettle" or sometimes a "hog"; shunters are "snakes," the end carriage is "the back porch," and the guard's van is the "tail-end shack"; a fireman is a "diamond juggler," and the driver is the "hoghead."

If an engine is derailed it "jumps the rust," and when the driver puts on speed he "bends the iron." A railway telegraphist is just a "brass-pounder," and the railwaymen's canteen is the "hash-house."—*From "The Evening News."*

* * *

THE HONOURS LIST

It's in vain that we have pondered
O'er the latest O.B.E.s,
And we've read and we have wondered
How the "getters" have got these.

If you've worked for a Department
Like M.A.P., or M.O.S.s
Then you'd know what such a start meant
You poor deluded "willing hosses"'

Verbal praise that flows so cheaply
We've had given by the ton,
But it's this we feel so deeply—
Others get what we have won!

Factories of size gigantic
Whose business gave them cause for pride—
Their tonnages, that seemed romantic,
We have taken in our stride.

They've had hand-picked labour given,
By the thousands, of the best;
But the railways, they have striven
And made good with "just the rest."

Yet when marks of adulation
Have been showered on the land,
Railways' share is tribulation—
They're not in the "ruddy band."

Tho' rank is but the guinea stamp
You railwaymen need never mope
You'll find, to end this Honours ramp,
You've "R.I.P." as final hope.

E. G. G

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OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Estimates for 1945-46

The estimates of expenditure on capital and improvement works for the year ending March 31, 1946, have been tabled in the House of Assembly by the Minister of Transport. The estimated total expenditure is £7,849,033, which is £122,724 less than for the financial year 1944-45.

At Durban Harbour there will be further work on deep-water berths at a cost of £140,370. Deepening and widening the Maydon Channel will absorb £22,000, and lengthening the Island View Wharf, £9,000. Lengthening the south breakwater will cost £65,969 in the current year, removing the cant in the North Pier, £21,200, and replacing the timber wharves at Island View by concrete, £5,000. A commencement will be made on the deepening of Island View Channel, £12,000, and the Salisbury Island developments will be completed at an estimated total cost of £304,600 by the provision of £24,985 this year.

Provision has been made for a beginning on the £2,115,000 scheme of track improvements—doubling of line and improved curves—between Broughton and Umbulwana on the Natal main line. A sum of £2,000 is provided for this year. An amount of £5,000 will also be spent on preliminary work on the Durban marshalling yard; £8,000 has been earmarked for preliminary work on the new station at Durban, a project which is estimated to cost £426,163 in all. A new radio station is to be built at Durban Harbour at a cost of £6,600, and a tide gauge to cost £600 will be installed.

UNITED STATES

Illinois Central Prepares for Higher Speeds

Preparation for higher train speeds after the war is being made actively by the Illinois Central System. In this connection the safety of the track is of vital concern. A record is kept of the exact location in the track of every cast of rails, and if any cast in a main line shows more than ten failures due to transverse fissures, the entire cast is removed from the line, and is not relaid in any line over which speeds in excess of 25 m.p.h. are run. All important lines are patrolled by a Sperry detector car from one to three times a year; the railway owns one of these cars, and hopes to acquire another shortly. Track renewals have taken place on an extensive scale with heavier rail, larger sleepers and soleplates, longer fishplates and better ballast; and much attention has been paid to drainage, restoring the width of eroded embankments, and stabilising the road bed generally.

For high-speed traffic No. 20 turnouts with 33-ft. curved switch-blades are now standard; and, although speed over diverging lines is limited to 40 m.p.h., they can be taken in comfort and with reasonable safety at up to 50 m.p.h. Spring trailing switches are replacing ordinary switches at the leaving ends of these turnouts.

War conditions have meant longer trains; passing tracks capable of holding trains of 100 bogie wagons are common, and others have been lengthened to hold 120 or even 140 wagons. It is generally expected, however, that post-war trains, both freight and passenger, will in general be shorter, to permit of easier handling and faster operation. As to the steam locomotives, much has been done at the depots to permit simultaneous and speedy coaling, watering, sanding, and other servicing operations, so that the engines may be in actual running for the maximum possible proportion of their time.

Baltimore & Ohio Access to Detroit

The Baltimore & Ohio Railroad is seeking sanction from the Interstate Commerce Commission for an important alteration in its means of access to the city of Detroit. Hitherto, between Toledo and Detroit the Baltimore & Ohio has used the tracks of the Pere Marquette Railway, partly single, for 64¼ miles into the Fort Street Union Station at Detroit, where the platform tracks are not long enough to accommodate the modern Baltimore & Ohio trains, and where additional engine movements are required, which it is desired to eliminate. The Baltimore & Ohio, which already used the New York Central station at Toledo, seeks running powers over the New York Central double main line between Toledo and Detroit, and the use at the latter of the more commodious station of the Michigan Central, a New York Central subsidiary. An additional advantage would be a reduction in the journey from 64¼ to 57 miles. It is proposed by the Baltimore & Ohio to pay $1.15 a train-mile for the use of the tracks, and $5.32 for each coach moved into and out of the Michigan Central station in Detroit.

Three passenger trains are operated by the Baltimore & Ohio into and out of Detroit, including the diesel-hauled "Ambassador" to and from Washington, and one additional southbound train for mail and express traffic only; during 1944, 400,000 passengers in all were handled by these services. The Baltimore & Ohio agreement with the Pere Marquette expires in June, so that the present is a particularly suitable time for making a change. The Pere Marquette Company desires to retain the Baltimore & Ohio patronage, and is contesting the application.

ARGENTINA

Diesel-Electric Railcars for State Railways

The Administration of the Argentine State Railways has placed an order for the construction of seven diesel-electric railcars, out of a series of 30 which it is proposed to build. The engines will be built in the State Railways' workshops in Córdoba and in the shipyards of the Navigation & Ports Department, and the bodies will be constructed in the Tafi Viejo workshops of the State Railways.

Expropriation of Grain Elevators

The National Grain & Elevators Commission recently took over the remaining grain elevators, deposits and sheds, which were still in the hands of private firms, at the ports of Quequén, Mar del Plata, La Plata (Río Santiago), Villa Constitucion, San Lorenzo and San Martín.

Purchase of Land for Airfields

It is reported that the National Government had decided to take steps to purchase various areas of land for the establishment of civil airfields. One of the properties, of approximately 300 hectares, extends from the urban zone of the city of Córdoba to the Colón Department; its cost is estimated at over 100,000 pesos. Another is situated in the Rosario Department, near Alvear Station on the Central Argentine Railway, in the Province of Santa Fé, and comprises about 270 hectares, valued at over 600,000 pesos. A third comprises some 100 hectares, and is required for extending the national airfield at Santa Rosa de Toay, Territory of La Pampa.

An additional report is to the effect that the Government has accepted a donation of 62 hectares at a point known as Bajo de los Padernales, in the Province of La Rioja, for the construction of an airfield.

Road Construction in Buenos Aires Province

The Province of Buenos Aires Roadways Board has in hand the construction of roads from Tornquist to Olavarría, and from Coronel Suarez to Coronel Pringles. Plans are to be prepared for the building of a road from Bahía Blanca to Coronel Pringles, 120 km. (about 75 miles) in length, at an estimated cost of 3,000,000 paper pesos, and of one from Coronel Dorrego to Monte Hermoso, estimated at 500,000 paper pesos.

MEXICO

National Railways Locomotive Orders

Important train-service developments on the National Railways of Mexico are foreshadowed by orders which have been placed recently with U.S.A. firms. The Electro-Motive Division of the General Motors Corporation is to build seven diesel-electric locomotives for service in mountain districts; the size and power of these has not yet been made public. Also, an order for 32 powerful steam locomotives of the 4-8-4 type has been divided equally between the Baldwin Locomotive Works and the American Locomotive Company.

VENEZUELA

Proposed New Railway

Serious consideration is being given to the construction of a railway from the cattle-producing plains of Venezuela to Caracas and other consuming centres. The Sociedad Promotora de la Compañia Gran Ferrocarril de los Llanos, constituted in March, 1944, has announced plans for the issue of 100,000,000 bolivares in common and preferred stock, of which the distribution will be 51 per cent. in Venezuela and 49 per cent. in the United States. Preliminary studies are nearing completion, and negotiations are in progress for the construction and financing of the railway.

CEYLON

Shortage of Carriages

Representations have been made by the Ceylon Government Railway to the authorities in England for assistance in expediting the despatch of a substantial consignment of railway carriages complete with underframes and fittings. The shortage of carriages is the principal handicap in the provision of a better train service.

For some years before the war only the steel underframes and fittings of coaches were imported; the bodies were manufactured at the railway workshops in Colombo of teak imported from Burma. With the outbreak of hostilities in the East the supply of teak from Burma ceased and it is stated that the local timber available is not quite suited for the construction of carriages. The only course is to obtain the complete carriages from abroad.

Of all railway material it is the carriages that have suffered most by theft. Only the wooden framework of the carriages has been spared; the brasswork, mirrors, electric bulbs and fittings, communication cords and even cushions have been pilfered. The refitting of these carriages with new material would be no easy task even in normal times.

Recent Signalling Developments—4*

Pre-war progress in Great Britain, with some indication of how the latest technical developments might be applied to post-war traffic problems

By O. S. Nock, B.Sc., A.M.Inst.C.E., M.I.Mech.E., M.I.R.S.E.

FROM the direct control of signals and points in a critical area, as described in the preceding article of this series, the remote control principle can be further applied as a means of co-ordinating the general direction of train movements in and around a large and complicated traffic centre. The need for such co-ordination is not always apparent. When regular passenger trains are running punctually, and there are few or no specials booked, the slower grades of freight train can usually be worked through smoothly. It is when many extra passenger trains are scheduled, or there is a rush of seasonal goods traffic that matters are most liable to get out of gear. Those who have made a study of traffic working readily will recall occasions when operation at large centres has degenerated into a well-nigh inextricable

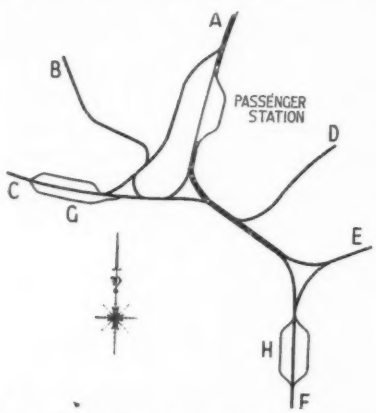


Fig. 9—Sketch plan of controlled area

tangle; when no amount of improvising will straighten matters out, and when it is only some easing of the pressure that allows a semblance of punctual working to be restored. That it needs only one such impasse to cause serious repercussions on train working in many parts of this country goes without saying.

A typical railway centre, and a potential source of extreme congestion, is shown diagrammatically in Fig. 9. Four main routes, from "A," "C," "E" and "F" converge on the large through passenger station. There is a suburban line from "D," and a country branch line from "B." Through goods traffic is dealt with in extensive marshalling yards at "G" and "H," and the actual goods station for the area is located alongside the passenger station. The traffic, in broad outline, is as follows:—

Heavy express passenger: "A" to "C"; "A" to "E"; "A" to "F"; "E" to "C"; and "E" to "F," in each case about one train an hour, average, in both directions.

Heavy coal traffic: "E" to "F"; "E" to "C"; "E" to "A."

Express fruit and produce trains: "A" to "E"; "A" to "C," from "A" only.

Frequent service of intermediate passenger trains from the central passenger station to and from "A," "C," "D" and "E."

Express goods "C" to "A" (using the avoiding line) and "F" to "E."

Morning and evening suburban trains from central station to and from "A" and "D."

Intermittent goods and slow passenger trains to and from "B."

In this discussion it is assumed that the area illustrated in Fig. 9 would come under the supervision of a district control office, which in turn would report to a divisional control. To operate all the points and signals in so complicated a railway centre with the speed necessary to keep traffic moving is obviously far beyond the capacity of one man; yet for efficient working it is desirable that there should be one supreme authority in close touch with the general situation everywhere in the area. The Controller does not need to concern himself with the detailed working in the central passenger station, where shunting, the remarshalling of through trains, engine changing, and so on, would be controlled locally by means of a full power interlocking, operated either from a power frame or a control panel with route-relay interlocking. The Controller, similarly, cannot afford to become engrossed in details of working in the goods marshalling yards at "G" and "H." All such matters can be far more efficiently handled by men on the spot. Where the Controller must exercise direct supervision is in the regulation of train movements to and from the main running lines. The following scheme has been worked out as indicating the degree of remote control, and remote supervision that can be applied to an important area as a result of modern scientific developments in signalling.

The heart of the scheme is an illuminated diagram, which avoids all need for telephonic advice of train movements to be sent to District Control. In Fig. 10 is shown the track layout for the whole area, arranged diagrammatically so as to come within the space normally available upon a C.T.C. control machine. But although train movements throughout the area are indicated on the diagram, it is only in the critical central portion between the junctions at "J" and the triangle "K.M.E." that running movements would be under direct C.T.C. control. Co-ordination of working is the principal aim, and this requires careful linking up with the other major centres of operation, as follows:—

(*a*) Unchecked arrival and prompt departure of trains from the central passenger station.

(*b*) Careful regulation of goods train movements controlled by the yard boxes at "C," "F," "J," "M" and "N."

(*c*) Use of the through line from "A" to "J," avoiding the central passenger station.

(*d*) Manual block working from the branches "B" and "D."

(*e*) A system of train description for the main routes entering the area at "C," "E," and "F."

The Central Passenger Station

The station itself, together with the immediate approach lines, the connections to the locomotive running sheds, and to the goods terminal would be operated as a separate unit. So that the Controller at any moment may know to what extent the station is occupied, however, certain key track circuits would be indicated on the large illuminated diagram in the District Control office. At the "A" end the approach to the station is fairly straightforward, and the station signal box would be in direct contact, either by manual block, or a system of train description with the next interlocking down the line. The working here would be carried on without any reference to Control, unless the station avoiding line from "A" to "J" required to be used, or unless exceptional circumstances developed. The avoiding line is so intimately bound up with operating at "J" that its use must be regulated with careful reference to the prevailing flow of traffic in the central junction area. Normally the points at "A" would be set for entry into the passenger station.

The Controller at all times must exercise a watching brief over the movements of trains to and from the passenger station. He has before him on the illuminated diagram the occupancy or otherwise of all the platform roads, and, being aware possibly as much as ten minutes in advance of the approach of trains, he is in a far stronger position to ensure an undelayed approach than the signalman in the station box, to whom the train is ordinarily "offered" only when it is close at hand. Similarly, the Controller will require early advice of the destinations of through trains arriving from the direction of "A." At present it is sometimes the practice at large stations to advise the signal box when a train is ready to start. Not infrequently the signalmen are unable to give such a train the road immediately, and a delay of a minute or so in starting is experienced. If, instead, the train were described to Control on *arrival*, such as "Express Passenger for 'E'," or "Stopping Passenger for 'C'," the Controller, allowing for the usual station time, would know that the road would be required in, say, five minutes time and could arrange accordingly. Furthermore, with the stay of important trains brought thus under direct scrutiny, Control could indulge in a little hustling should station work tend to become unduly protracted.

The arrangements for train description of departures at the "J" end of the central station would be included in the C.T.C. system. A form of indicator to be used in the Control room is illustrated in Fig. 11. The description of the train standing at any particular platform would be illuminated on its arrival, by the platform inspector pressing the appropriate button. The description would remain illuminated, and in due course the platform staff would signal "ready to start" whereupon a letter "R" would be illuminated on the Control-room indicator, and, of course, in the signal box. Providing the road out of the station was clear, the signalman would pull off his starting signals, and the indication displayed on the most advanced of these—signals 1 or 2 in Fig. 12—would depend on the indication displayed by the C.T.C. controlled signals ahead. As soon as the

* Part 1 appeared in our May 18 issue, Part 2 in our June 1 issue, and Part 3 in our June 15 issue

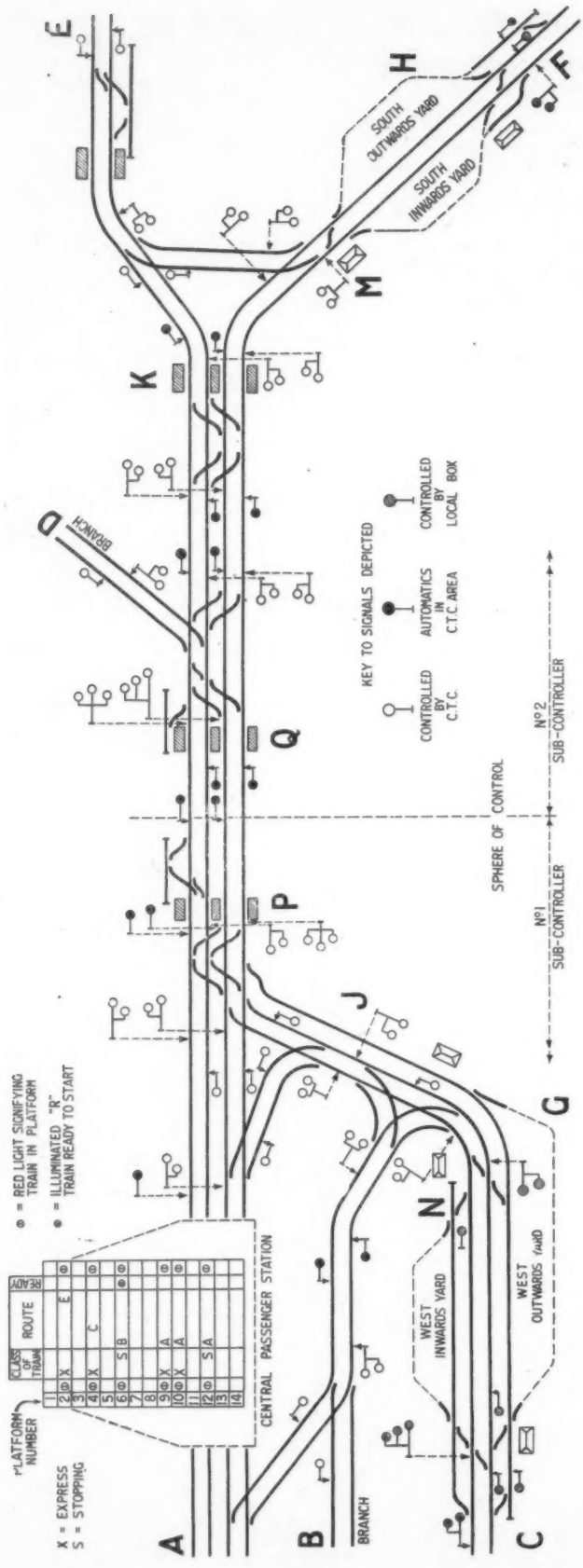


Fig. 10—General layout of controlled area as shown on illuminated diagram

train was clear of the platform the description lights in the Control room would be extinguished.

Goods Yard Signal Boxes

It would most likely be possible for the goods yard signal boxes to retain mechanical interlockings, as speed in

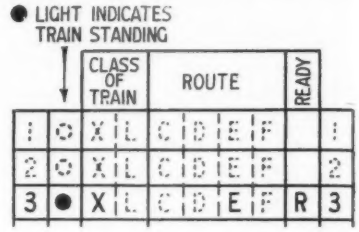


Fig. 11—Route indicator in control room for trains leaving central passenger station

working is not so important as in the passenger station. The layout at "C" may be taken as typical, and the connections are shown in Fig. 13. Goods running loops extend for about a mile beyond "C," and these could be arranged for permissive working. The outlying points

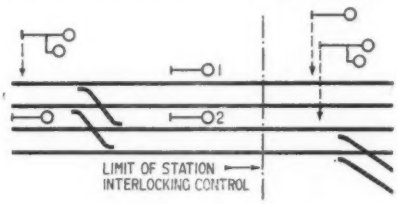


Fig. 12—Outgoing signals at south end of central passenger station

"X" and "Y," and the signals reading over them would be worked from the box at "C." The Controller would advise the signalman by C.T.C. of the description and route of arriving trains, and of the required priorities in despatch of outgoing traffic. For this purpose

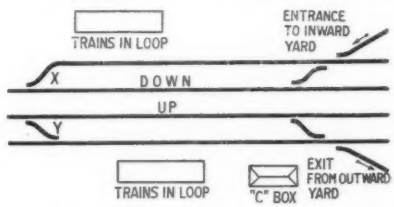


Fig. 13—Layout of goods running loops

illuminated indicators would be installed in the signal box at "C"; that relating to arriving trains would be as shown in Fig. 14. Permissive working in the two loops allows the slower grades of goods trains to be cleared, from the yard in the case of outgoing traffic, or from the main line in the case of arrivals; up to four or five trains can thus be stowed until such time as there is a clear path for them. At the same time faster goods trains can be given priority. With permissive working under C.T.C. conditions, it is necessary for the Controller to have some visual record of how many trains are berthed in the loop lines; a system of relays can be arranged so as to count trains in and out. Supposing the loop is

empty, the first train to pass over a short track circuit at entrance would cause the figure 1 to be illuminated on the track diagram alongside the representation of the loop line. When the second train enters, and assuming that the first has not yet left, this figure changes to a 2, and so on. With the departure of a train from the loop the figure would be changed, say, from 4 to 3.

NEXT DOWN TRAIN

CLASS	ROUTE	
	AT X	AT C
P LE EC G	LOOP MAIN	LOOP YARD MAIN

Fig. 14—*Train arrival indicator in "C" box*

Train Description

On the routes entering the area at "C," "E," and "F" there is not only variety in the classes of trains, but also in their routes. For instance, express passenger trains approaching "E" may be for "A," "C" or "F" and, unless the telephone is to be used, some form of train description is necessary. Such train description apparatus can be operated as part of the general remote-control system. On the other hand, the traffic from the branch "B" is relatively simple. In the ordinary way, all passenger trains terminate in the central station, and the local goods trains are passed into the marshalling yard at "G." This traffic quite adequately can be described on the ordinary block bells. The same applies to the local passenger train service from the branch "D." In the case of goods trains from "E" proceeding towards either "A" or "C" it is essential that these occupy the least possible time on the quadruple main line between "K" and "J." With centralised control of all train movements, the Controller, before accepting one such train from "E" can see at a glance whether the reception road at "J" is vacant; if not, the yard at "G" can be instructed to clear the occupying train as soon as possible. From his contact with the yard, and his knowledge of other traffic movements, the Controller is in a good position to judge whether the goods from "E" can be got through without causing delay to faster trains.

Control Room Layout

The extent of the direct C.T.C. control is indicated on the diagram in Fig. 10, and generally covers the central area between the junctions at "J" and the triangle formed by the junctions "K," "M," and "E." The signals controlling entry to, and departure from the area on the routes "B," "C," and "F" are also included, as the Controller is responsible for contact with the adjoining block posts on these routes, either by train description apparatus or block instruments. In consideration of the volume of traffic passing through this area it would in all probability be necessary for the actual signalling work to be divided between two sub-controllers. The two spheres of control can be divided most conveniently between the suburban stations "P" and "Q." While No. 1 Sub-Controller has the passenger station to deal with, No. 2 has manual block working on the busy suburban line "D," two separate groups of train description apparatus to operate, and in addition control the considerable traffic that passes direct between "E" and "F." It is essential for this latter to be supervised from the District Control Office, for although none of it passes through the critical area its movement through junctions "E" and "M" is liable to conflict with the running of trains to or from the central area, and must be carefully regulated on that account.

A pictorial representation of the Control Room is given in Fig. 15. The illuminated track diagram is large, and mounted on the wall, so that everyone working in the room can see at a glance the position of all trains. The control machine, built in two sections, is a combination of the usual type of C.T.C. control instrument, and the type of desk used in District, or Divisional, Controls where the telephone is the only means of giving instructions to signalmen and train crews. Thus, the keyboard of this combination instrument would include the thumb-switches for C.T.C. operation of the directly-controlled points and signals, the indication lights for these signalling functions; the telephone switchboard for communicating with signal boxes, signals, stationmasters' and yardmasters' offices, and the train-description apparatus. A sketch of a portion of the control machine is given in Fig. 16. Behind the control machine is the District Controller's desk, and desks equipped with separate telephone and switchboards would be provided for other operating men, whose responsibilities make it desirable for them to be in the Control Room.

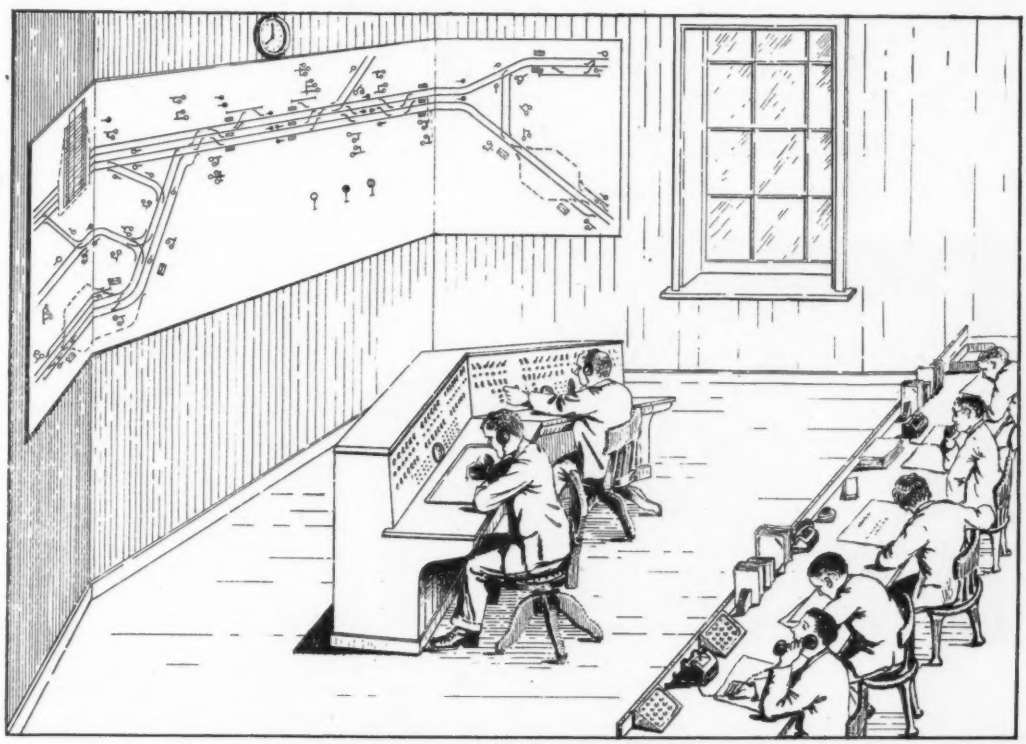


Fig. 15—*Pictorial representation of the control room*

Electrical Controls

From the electrical engineering point of view the most convenient place for the

Control Room would be either at station "P" or "Q," or somewhere between the two. Thence a 2-wire C.T.C. control line would go out in each direction, one towards "J" and one towards "K." The two sections of the plant would then work simultaneously though independently. Assuming that this location is adopted for the Control Room, the control and indication of signals and points, and the track circuits, south and east of station "Q" would be accomplished on a single pair of line wires. Ordinarily, only one code, control, or indication can be transmitted at a time, and in so busy an area there might be some delay in the transmission of codes. It is now possible, however, on the same two line wires to superimpose on the ordinary d.c. codes additional codes by which a further set of functions can be controlled simultaneously. In the area under the supervision of No. 2 Sub-controller the ordinary d.c. code would be used for the section from "Q" up to and including the junction "K." Throughout this length there would be superimposed upon the two line wires other codes for the control and indication of the various functions beyond "K." At "K" these codes would be changed into ordinary d.c. code for transmission to the outlying signals and points. It is essential that there should be no delay whatever in the transmission of messages relating to train description, and the codes concerned could be made quite independent of all signalling codes by using a second channel, of different kind to the first, for their transmission, on the same pair of line wires. The telephone circuits, however, would be entirely separate.

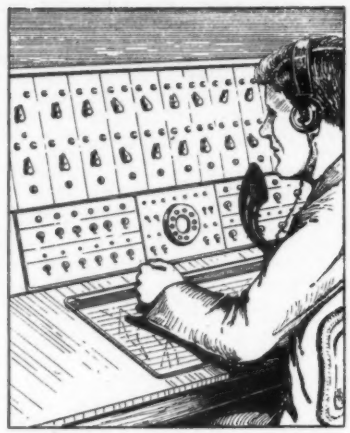


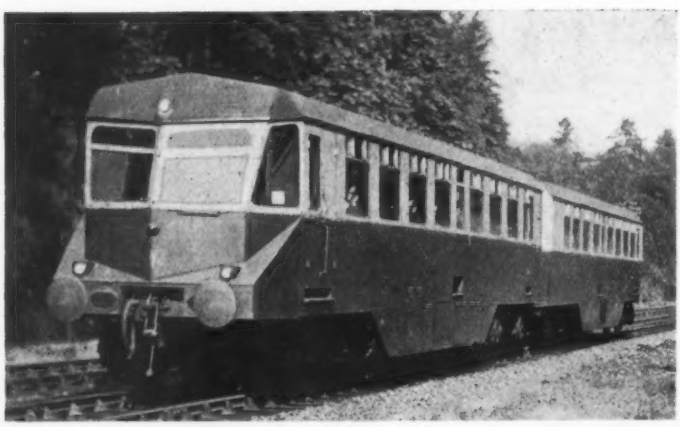
Fig. 16—*Portion of control machine*

In conclusion, it should be emphasised that the foregoing does not attempt to lay down a hard-and-fast, nor yet a complete, scheme. In the past a great deal of attention has been focussed on the signalling of large interlockings, of which the central passenger station in the imaginary layout discussed provides an example. There is now a growing realisation that as much, if not more, attention should be given to the signalling of the approaches, so that the flow of traffic may be properly regulated. Though representing, perhaps, a case of some complexity, the example discussed in this article has been worked out as one illustrating the need for the efficient co-ordination of all train movements, and as showing how this co-ordination can be achieved by means of modern remote control.

(*To be continued*)

G.W.R. Diesel Railcars

Areas covered by services



DURING the European war period the diesel railcars possessed by the Great Western Railway Company have been performing useful work on local services throughout the system based on the following depots: Southall, Reading, Oxford, Bristol, Cheltenham Spa, Pontypool Road, Newport, Llantrisant, Landore, Carmarthen, Worcester, Leamington Spa, and Stourbridge Junction.

The areas covered by services from the various depots are:—

Southall.—London and Reading; London, Ruislip & Ickenham, *via* Park Royal and *via* West Ealing.

Reading.—Twyford and Henley-on-Thames; Newbury, the Lambourn branch and Savernake.

Oxford.—Princes Risborough; Banbury; Kingham and Chipping Norton.

Bristol.—Bath, Westbury, Weymouth and the Abbotsbury branch; Portishead; Wells *via* Yatton; Radstock and Frome; Avonmouth Dock and Severn Beach.

Cheltenham Spa.—Gloucester and Ledbury.

Pontypool Road.—Abergavenny and Monmouth (Troy).

Newport.—Severn Tunnel Junction, Chepstow and Monmouth (Troy).

Llantrisant.—Cowbridge.

Landore.—Swansea, Felin Fran, Llandarcy, Briton Ferry, Port Talbot and Carmarthen.

Carmarthen.—Whitland.

Worcester.—Malvern and Ledbury; Kidderminster, Bewdley, Bridgnorth and Shrewsbury; Bewdley, Tenbury Wells, Wofferton and Ludlow.

Leamington Spa.—Stratford-on-Avon, Honeybourne and Evesham.

Stourbridge Junction.—Dudley and Old Hill.

The cars working between Paddington and Reading and Paddington and Ruislip & Ickenham are vehicles of a special type and are used for the conveyance of parcels traffic only.

Twenty-four cars, which includes two twin units, out of a total of thirty-eight, are in booked services and these on week days run 3,562 miles a day; on Sundays 333 miles are run by three services. At the outbreak of war with the general curtailment of normal passenger services, the use of diesel cars was restricted for a period, but progressive and extensive use later has been made of the units during the war and since.

(*See editorial note, page* 635).

CONTROL OF NON-FERROUS METALS.—The Minister of Supply has made the Control of Non-Ferrous Metals (No. 17) (Copper, Lead & Zinc) Order, 1945, which came into force on June 11. It increases the maximum prices for lead by £5 a ton, for zinc, zinc sheets, and rolled zinc (boiler plates) by £5 10s. a ton, and for zinc oxides by £4 15s. a ton. This represents the first increase in the prices of unwrought lead and zinc since December, 1939. The Order also abolishes certain maximum prices. It does not effect any change of importance in respect of the licensing of the acquisition or disposal of non-ferrous material concerned, but it provides for the exemption from the operation of the maximum-price provisions of scheduled materials which are delivered or intended to be delivered outside the United Kingdom or on board ship for export outside the United Kingdom. Holders of valid licences to purchase lead and zinc metal (as sold by the Control) granted on or before June 10, 1945, on application to the Joint Controllers, Non-Ferrous Metals Control, Grand Hotel, Rugby, may cover themselves by purchases, where they have not already done so, against such licences up to and including June 24, 1945, at the maximum prices ruling on June 10, 1945.

INSTRUCTION IN QUALITY CONTROL METHODS.—A course of elementary instruction in quality control methods is to be given in London from July 16-20. It will consist of lectures, practical work and a demonstration at a factory; it is intended for designers, draughtsmen, engineers and inspectors who are likely to make use of the methods in their work and will be suited to those with mathematics to at least National Certificate standard. Details may be obtained from the Ministry of Supply, Advisory Service on Quality Control, Berkeley Court, London, N.W.1.

Light-Type (War Standard) Metre-Gauge Beyer-Garratt Locomotive for Far Eastern Railways

Ordered by the Ministry of Supply for the War Department

BY the courtesy of Beyer, Peacock & Co. Ltd., we are now able to describe and illustrate this new war-standard locomotive, many of which have been delivered already to distant theatres of war. Part of the forward planning for the Far Eastern zone campaign was the arrangement for the production of the necessary engine power to deal with the colossal traffics on the various lines of communication behind these fronts.

As many of the railways in India and those of Burma, Federated Malay States, Siam, and Indo-China are of metre-gauge and have a considerable mileage of heavily-graded sections, it was necessary to provide a number of special locomotives of maximum hauling power to feed these fronts in addition to the ordinary straight type of engine.

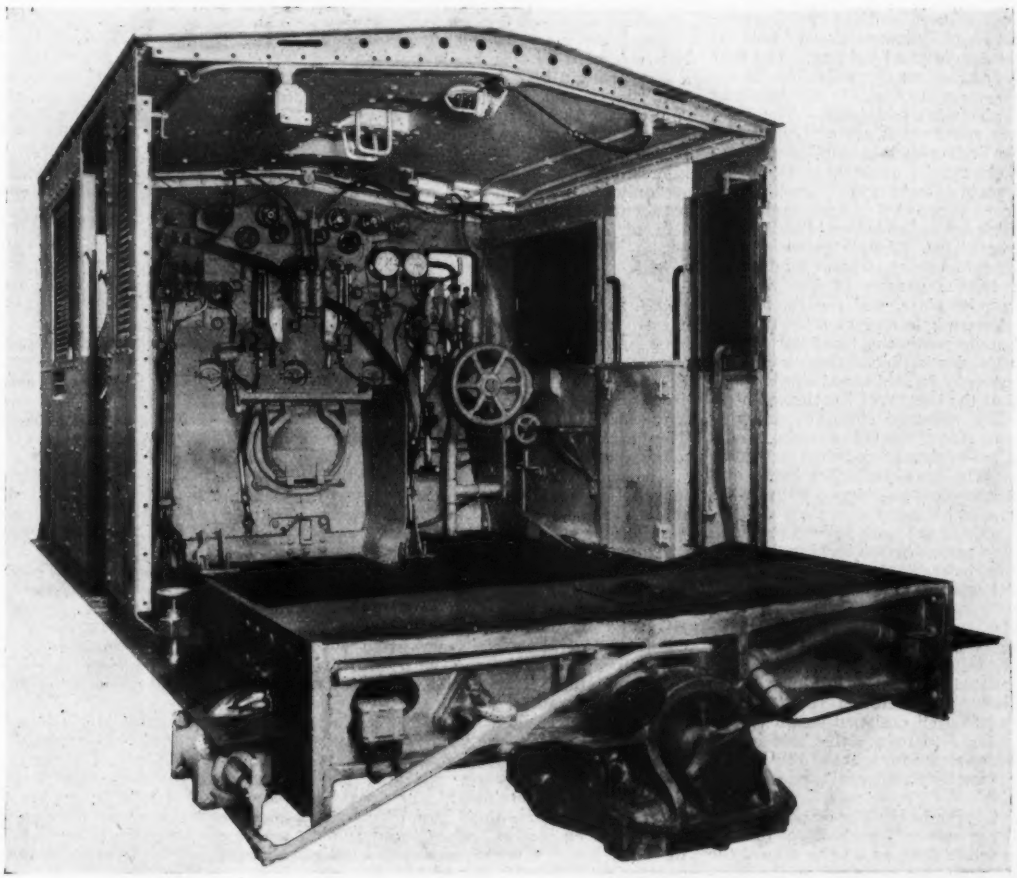
The Beyer-Garratt articulated type was selected for this work. Beyer, Peacock & Co. Ltd. accordingly was called on to design and manufacture a Beyer-Garratt locomotive which, while being suitable for heavy-grade work, would also fill the role of a general-purpose locomotive and have the widest possible application on the metre gauges of the Far East. In view of the considerable mileage of light track, namely, 50-lb. per yard, met with in these parts, a maximum axleload of 10 tons was fixed and naturally the engine would have to conform to the smallest loading gauge, namely, the Indian standard which thus restricted the maximum width and height to 8 ft. 6 in. and 11 ft. 3 in. respectively. Although this was to be regretted, the Beyer-Garratt type of engine fortunately permits the inclusion of an adequate boiler and large cab despite these restrictions. Incidentally, the cab fitted to this engine is larger than any existing cab on metre-gauge railways built to the Indian loading gauge.

As certain railways in India can take a height of 11 ft. 9 in., removable strips have been fitted to the front, back and sides of the cab, thus permitting an 11 ft. 3 in. or an 11 ft. 9 in. height from rail level as desired.

The Federated Malay States and Siam loading gauges have a width of 9 ft. 3 in. and a height of 12 ft. 9 in., while other metre gauges go to even a 10-ft. width and a height of 13 ft. 6 in. For such railways, of course, advantage could be taken of this additional width and height. The coupler height is 1 ft. 10 in. from rail level, which satisfies all the railways concerned. It will be noted that the wheel arrangement selected is 4-8-2 + 2-8-4 which gives reasonable coal and water capacities. A further vital point is the selection of a 4 ft. diameter coupled wheel, similar to the Indian standard " YD " type, thus rendering the locomotive suitable for all types of traffic, speeds up to 45 m.p.h. and particularly suitable for 1 in 40 grades and permits its use, although less efficiently, on even more severe grades up to 1 in 25. The engine is designed to negotiate curves of 300 ft. radius at gauge width and 250 ft. radius curves with $\frac{3}{8}$ in. widening of gauge and to facilitate passage through the severe curves, the outer coupled wheels in this particular case have been made flangeless.

The design is completely new and represents the maker's latest practice for this type of engine, all of which has been achieved despite the difficulties of wartime production and the necessity for conserving materials and man-hours. The influence of austerity can still be seen, but this has not been allowed to detract from efficiency and modern design. Indian practice has been adopted in many details although not slavishly followed.

The locomotive is conspicuous for its high tractive effort, of 43,520 lb. at 85 per cent. boiler pressure, large boiler with 6 ft. dia. barrel, 49 sq. ft. of grate and commodious cab. The last named has been specially arranged for the severe climate in which these engines will have to work; the



General view of cab arrangement, showing controls and coupling

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necessity for protection from the weather and the need for maximum ventilation have been specially taken into account.

The leading dimensions are as follow:—

Cylinders (4) dia. × stroke	16 in. × 24 in. (406 mm. × 610 mm.)
Coupled wheels	4 ft. (1.220 mm.)
Wheelbase, rigid	8 ft. 11 in. (2,717 m.)
Axleload	10 tons (10,16 *tonnes*)
Adhesive weight	80 tons (81,28 *tonnes*)
Total weight (in working order)	136·8 tons (139,0 *tonnes*)
Boiler pressure	200 lb./sq. in. (14,06 kg/cm.²)
Heating surface :—	
Tubes—32 flue 5½ in. out. dia. / 185 small 2 in. out. dia.	1,813 sq. ft. (168,6m²)
Firebox (incl. arch tubes)	183 sq. ft. (17,0 m²)
Total evaporative	1,996 ,, (185,6 m²)
Superheater—1⅜ in. dia. tubes	399 ,, (37,1 m²)
Total	2,395 ,, (222,7 m²)
Grate area	48·75 sq. ft. (4,53 m²)
Tractive effort at 85 per cent. B.P.	43,520-lb. (19.740 kg.)
,, ,, at 75 per cent. B.P.	38,400-lb. (17.418 kg.)
Coal capacity	7 tons (7,11 *tonnes*)
Water capacity	4,200 gallons (19,1 m³)

The Boiler

The boiler, one of the largest ever placed on so light a rail, is of ample proportions for the work and fitted with a round-top firebox. As is possible with the Garratt principle of articulation, a large diameter barrel can be provided with unrestricted firebox and ashpan arrangements. In view of the limitation in height, the centre line of boiler is located 7 ft. 6 in. above rail level. The barrel has an outside diameter of 6 ft.; the distance between tubeplates is 12 ft. 11 in. It will be noted that the small tubes are 2 in. dia. The firebox is fitted with radial stays without cross-stays.

The inner firebox plates are of Colvilles firebox quality steel, and are welded at the front and back seams; the firehole is formed by flanging and welding. The four front rows of roof stays are flexible, as are also the water space stays in the breaking zones on the sides and back. The rigid steel water space stays are of Longstrand steel. The firebox-shell back-plate and also the smokebox tube plate are stayed by means of plate gusset stays.

Three arch tubes of 3 in. outside dia. are fitted, which are expanded and beaded into the firebox plates. Ample provision has been made for washing out and good access is given to the corners of the firebox, smokebox tube plate, and the throat and crown. A man-hole and mud collector is arranged underneath the front barrel ring where an Everlasting blow-off cock is fitted into the cover. An additional similar cock is located at the bottom of the throat sheet.

The boiler tubes of steel are provided with copper ferrules at the firebox tube plate and are expanded and then welded to the plate. The whole boiler, cylinders and outside steam pipes are lagged with J. W. Roberts' asbestos mattresses.

A regulator of the Zara type is mounted in the dome and a friction locking device is attached to the regulator handle in the cab. The superheater is of the MLS type with thirty-two elements 1⅜ in. dia., giving a superheater surface of 399 sq. ft. A snifting valve is mounted on the top of the header. Two Gresham & Craven No. 10 injectors, fitted with No. 11 Simplex cones, deliver feed water through the top feed clack box. A well designed steam turret, located outside to reduce the heat in the cab, provides steam for most of the mountings. It is fed by an internal pipe from the dome.

As will be seen in the illustration, quick-acting steam valves for the injectors are in an accessible position on the side of the boiler and a further scrutiny of the illustration will show that the injectors have been placed in a most convenient and accessible position underneath the boiler frame removed from the usual congestion immediately under the footplate. The long overflow pipe ensures that injector operation is clearly in view of the engine crew.

The safety valves, of which there are two, are of the Ross pop type 3-in. dia.

The smokebox is fitted with a small type of door secured by dogs with an asbestos joint, mounted on a bolted front plate. An ash ejector is arranged in the bottom of the smokebox with a hot water valve nearby on the front course of the boiler. The spark arrester is of the diaphragm type and the blast pipe is fitted with four Goodfellow tips. The usual combined blower elbow and tube cleaner cock is arranged on the left-hand side of the smokebox. The smokebox is supported by steel castings fitted to the boiler frames.

Particular attention has been given to providing steam pipes of ample proportions, so as to reduce pipe friction to a minimum.

The grate is arranged with rocking fire-bars, operated by steam or hand, and also a drop grate in two sections. The engines, with the generous grate area, are thus very suitable for the burning of low grade fuel and the large up-to-date self-cleaning ash-pan is a further facility to this end. It is interesting to note that the ash doors operate only from ground level and discharge between the rails. The finger bars allow 1 in. air space.

Engine Units

The main frames are of steel plates to B.S.S. 24, Part 6, No. 17, and a most rigid construction is ensured by the provision of steel-casting frame stretchers of generous proportions. The pivots, which are of the Beyer Peacock patent inverted and adjustable type with side rollers, are integral with massive cast-steel cross stretchers. The hornblocks are also of cast steel with adjustable wedges and liners.

The cast-iron cylinders are separate castings bolted to the frame. Particular attention has been given to providing an easy flow for the steam by straight steam ports and ample exhaust passages. The front covers are of cast iron and the hind covers are steel castings. Relief valves have been provided on each cylinder cover and Wota NC type bye-pass valves on the steam chest. The piston rods are fitted with Britimp metallic packing with ordinary swab box lubrication and the cylinder drain cocks are operated mechanically from the cab.

Special attention has been given to the design of the valve gear, and the accompanying design illustrates the very good layout of Walschaert gear. The drive being taken from the third pair of coupled wheels has enabled a long connecting rod to be used with a consequent reduction in angularity. It will be noted that the bottom pin of the reversing link is practically in line with the centre of the coupled wheels and this, coupled with the reasonable length of the lifting link, radius rod and eccentric rod, has enabled consistent valve events to be obtained. A valve travel of 5½ in. for the 8½ in. dia. piston valves is a good compromise between the short travel of older designs and the very long travels which sometimes are associated with less efficient motion layouts.

A maximum cut-off of 75 per cent. is obtainable in full gear, and it is intended that these engines should be worked freely in the shorter cut-offs. Reversing is carried out by a geared hand wheel and screw, fitted with Skefko ball thrust bearings, and the valve gear has been designed so that the die block is in the direct half of the link on both the front and the hind engines when working in forward gear. As these locomotives are likely to be used on long distances where chimney first working is perhaps to be recommended, this feature should reduce maintenance. Wearing surfaces and motion pins are case-hardened, the latter working in renewable phosphor bronze bushes.

The Laird type of crosshead, which has proved so suitable for dusty tracks, has been used, with double slide bars bolted to the hind cylinder cover and carried back to a robust cast-steel motion girder. The connecting rod, of fluted section and coupling rods of plain section, are of Class "C" steel to B.S.S. Part 4 No. 8, and big ends have gun-metal brasses lined with white metal with wedge and screw adjustment; the coupling rods are fitted with pressed-in gun-metal bushes lined with white metal. The knuckle joint pins of case-hardened Class "A" steel are fitted with split cones.

It is possible to withdraw the pistons for examination of the rings without uncoupling the crosshead. The piston heads are of forged steel with cast-iron bull rings riveted on, each piston carrying two narrow cast-iron piston rings.

The coupled axleboxes have cast-steel shells fitted with gun-metal horse-shoe bearings white metalled all over. Gun-metal liners are fitted on the horn faces and the hub faces are also white metalled. The sliding keeps are designed for use with ordinary oil lubrication, but are capable of conversion to grease, if required. Dust shields with a felt ring are fastened to the inside faces of the axleboxes.

Ordinary oil lubrication from syphon oil boxes is used for the axleboxes and separate feeds are made through the hornblocks to the horn faces. The usual type of syphon oil cup lubrication is used for the rods and motion.

The coupled springs are underslung and each engine unit is arranged for a five-point suspension—that is, compensating beams between the outer coupled and intermediate wheels, between the driving and inner coupled and between the inner coupled and inner bogie. Adjustable spring links are provided on the outer and inner bogie springs only; the coupled spring links are fitted with cotters and renewable bearing pads. All spring links are arranged in tension. All wheel centres are of cast steel and fitted with renewable cast-iron hub liners.

Steam ball joints are in accordance with Beyer Peacock practice, with cast-steel sockets, as are also the steam expansion joints, which are fitted with spring-loaded metallic packing with stainless steel sleeve on the end of the pipe. Steam pipe elbows and expansion joints are of cast steel. Exhaust ball joints and elbows are of cast-iron.

To suit the railways concerned, an A.B.C. centre coupler with buffer is fitted, and these have been provided with a special

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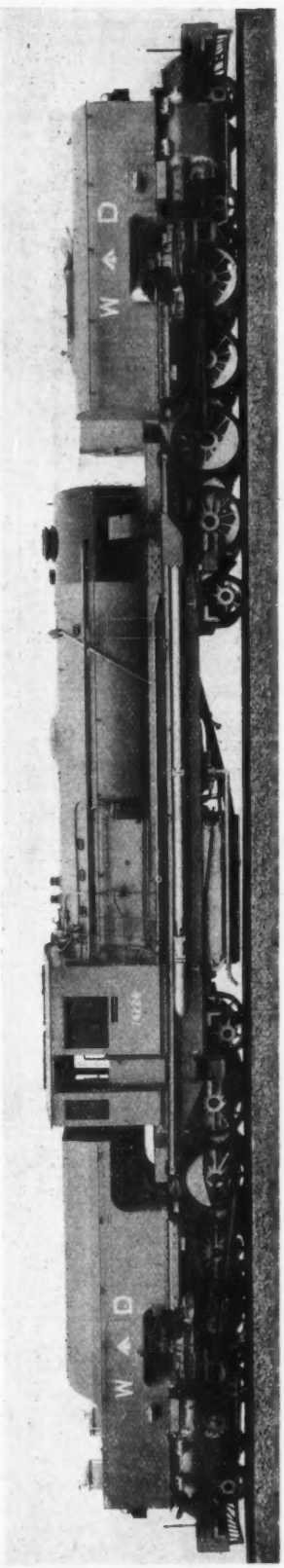

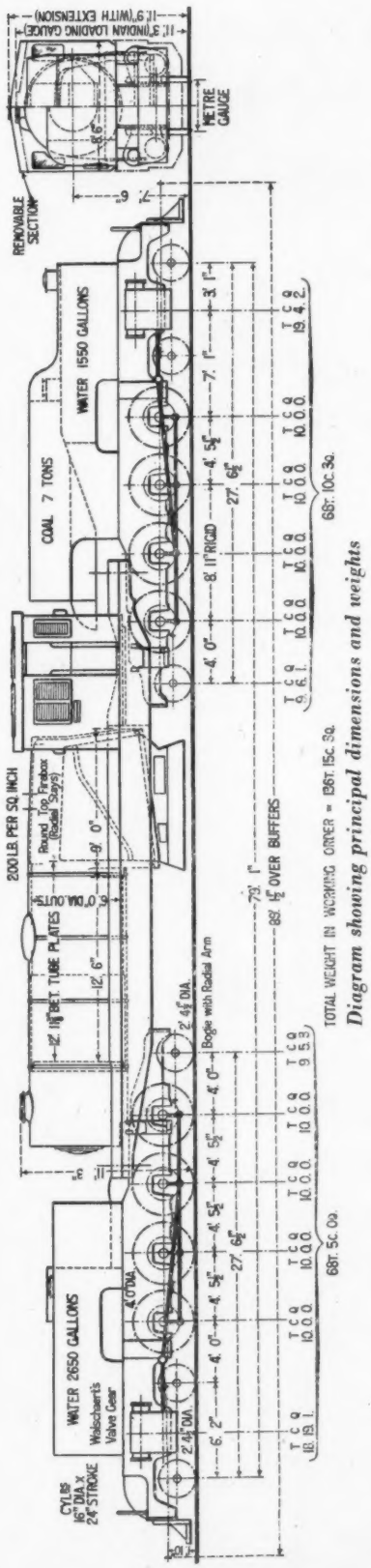

Light type (War Standard) metre-gauge Beyer-Garratt 4-8-2 + 2-8-4 locomotive

Diagram showing principal dimensions and weights

hinge type of head mounted on a long draw bar, so that all buffing and traction loads are taken by a helical spring mounted on a cast-steel frame stretcher between the cylinders.

Bogie and Brake Gear

The leading bogie is of the sliding centre type with laminated spring side control having a total side play of 6½ in. The plate frames are supported by one-piece cast-steel frame stays with gun-metal slides, independent springs being arranged over each axlebox. Solid gun-metal axleboxes are fully lined with white metal.

The inner bogies are of the radial-arm type with helical-spring side control and the total side play of 2¾ in. The makers' latest design of rocking brasses with white metalled bearings are provided, and the springs are carried on sliding pads working in an oil bath.

The steam brake operates on all coupled wheels, and a hand brake is provided for the rear unit only. The vacuum brake is controlled by a Gresham & Craven type "G" solid jet combination ejector, fitted with a Mark IV graduable combined steam-brake valve.

Cab and Mountings

A distinctive feature of these locomotives is the particularly roomy and comfortable cab and the orderly arrangement of the fittings of which the illustration gives a very good idea. A scrutiny of the illustration will show that every consideration has been given to the engine crew in the arrangement of controls in the most accessible and convenient position possible.

The combined firehole door and deflector is of heat-resisting Staybrite steel accommodated in the usual cast-steel frame for this type. All valves located on the steam turret are fitted with spindles extending to the steel panel above the firebox back, including the main stop valve; the names of the various valves are clearly indicated on the handwheels.

It is of interest to note the positioning of the Clyde soot blowers, which are of the side type. Careful attention has been given to the location and marking of the water gauges, which are of the Klinger patent reflex type. As these engines may be working on grades up to 1 in 25, the indicator plates by the side of the water-gauge glasses have been marked with the necessary water levels to ensure safe working on those grades. The adjustable spring-loaded friction device on the stuffing box for securing the regulator can be seen. A drifting valve of the Sellars type is mounted on the firebox side and operated from the cab. Lambert wet-sanding equipment, as supplied by Gresham & Craven Limited, is arranged for the front and rear of each coupled-wheel base.

A Wakefield six-feed AC type lubricator with separate condenser is arranged with one feed to each main steam pipe just before the ball joint and one to each main steam pipe branch at the cylinder.

Every consideration has been given, in arranging the general cab layout, to the weather conditions in which these engines may be called on to work. Sliding louvres and drop louvres are included in the cab sides and hinged windows in the front and back. Air doors in the front plate and sliding ventilators in the roof give good ventilation. The cab roof is of double steel sheet with asbestos insulation. Two tool boxes are provided, and hinged wooden seats for driver, fireman and inspector.

Stone's electric lighting system has been used for the full illumination of the cab

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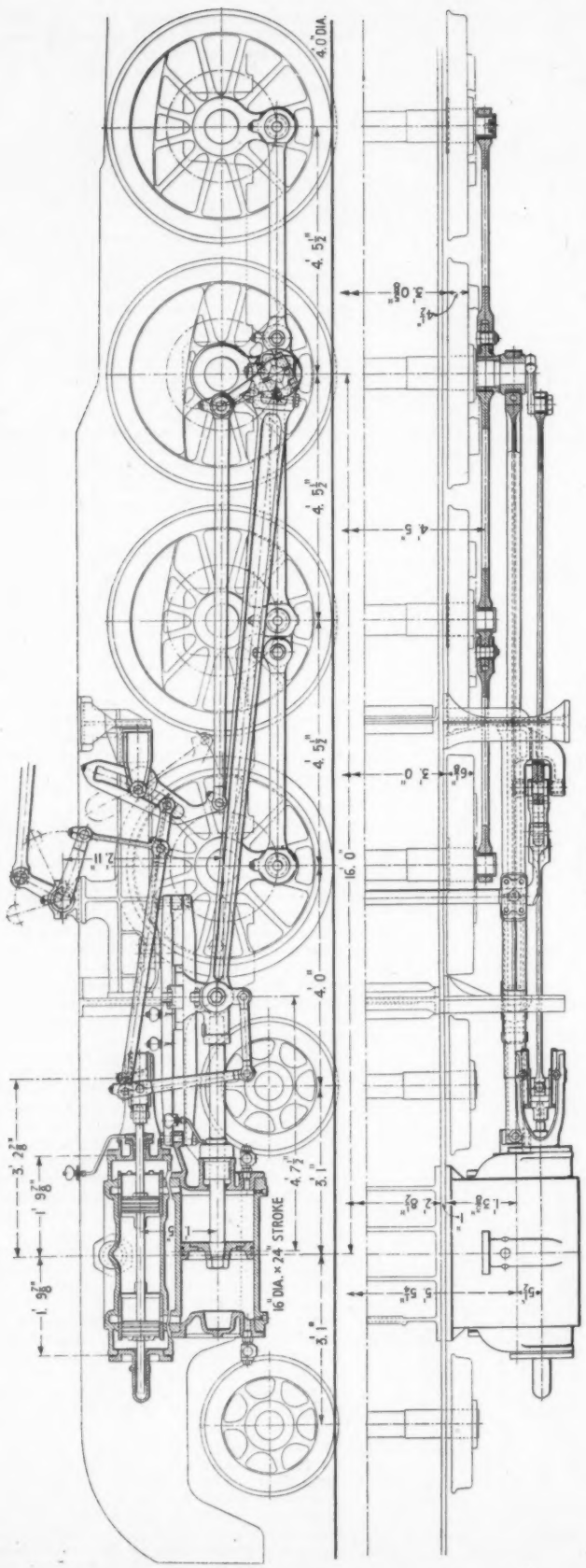
and fittings. This equipment includes front and back headlights of the Tonum "E" 250-watt type and also a plug-in headlamp.

Many of these locomotives have already been despatched to various destinations, and their performance under diverse conditions of service will be awaited with interest. In our August 25, 1944, issue we referred to two designs of Beyer-Garratts especially built for Burma, 1 in 25 grade. Taking these, and the locomotives described above, into account, the total number of W.D. Beyer-Garratts built for the Far East totals 44, or the equivalent in tractive effort of 80 I.S.R. Standard "YD" class Mikado type of the same axleload.



Arrangement of valve gear

Valve Events

Gear	Cut-off in per cent. of stroke	Lead F.P.	Lead B.P.	Opening F.P.	Opening B.P.	In percentage of piston stroke: Cut-off F.P.	Cut-off B.P.	Cut-off Diff.	Expansion F.P.	Expansion B.P.	Expansion Diff.	Release F.P.	Release B.P.	Release Diff.	Compression F.P.	Compression B.P.	Compression Diff.	Travel of valve: Valve	Beats of exhaust in angles of crank				
Forward	75					76¼	74¼	2	16¼	17¼	—	93	92	—	8	7	—	in. 5¼	90	91	90	89
	65					65¼	65	—	23¼	23¼	1¼	89	88¼	1¼	11¼	11	—	$4\frac{7}{16}+d_1$	90	90	90	89
	55					54	55	1	31	29¼	2¼	85	84¼	1¼	15½	15	—	4 less d_1	90	90	90	88
	45					44	46	2	37¼	35	2¼	81¼	81	1¼	19	18¼	¼	3⅜	90	92	90	89
	35					33¼	35¼	2	43	40¼	2½	76	76½	¼	24	23½	½	3⅜ less d_1	90	93	90	89
	25					23	25	2	48	46	2	71	71	—	29	29	—	3⅜	90	93	90	87
Mid	0																						
Mid	0					26	26¼	¼	47	45	2	73	71½	1¼	28¼	27	1¼	3⅜ less d_1	90	93	90	87
Backward	25					36¼	36	¼	41¼	40¼	—	78	76½	1¼	23½	22	1½	3⅜	90	93	90	87
	35					48	46¼	1¼	35	35¼	1¼	83	81	2	19	17	2	3⅜	90	93	90	87
	45					57¼	55	2¼	28¼	30	1¼	86	85	1	15	14	1	4+d_1	90	91	90	89
	55					66	63¼	2½	23	24¼	1	89	88	1	12	11	1	4+d_1	90	91	90	89
	65					76	74¼	1½	16¼	17¼	1	92¼	92	¼	8	7¼	¾	4½+d_1	90	90	90	90
	75																						

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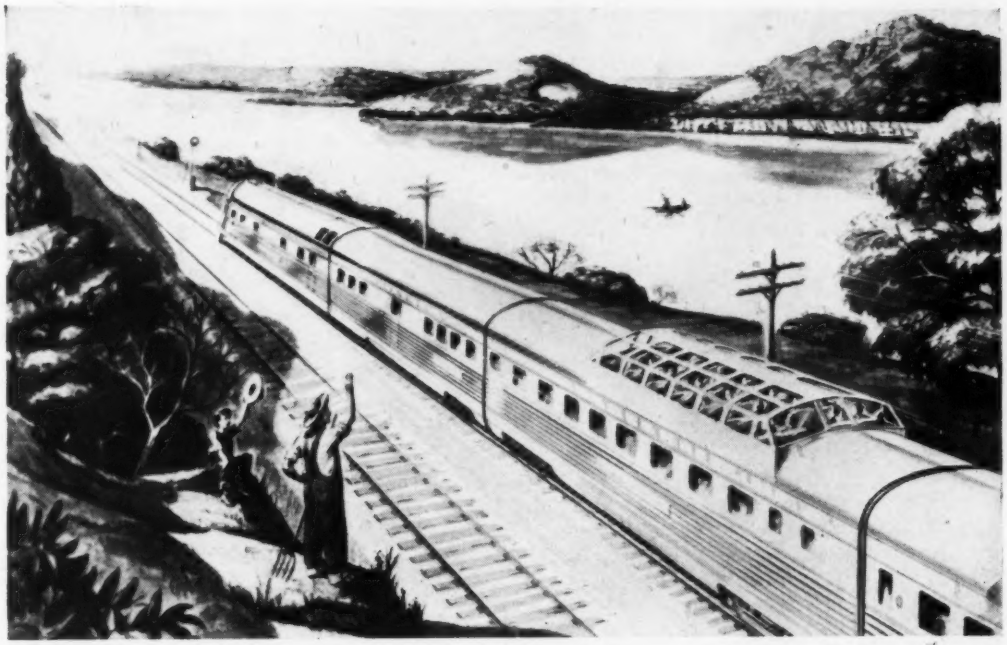
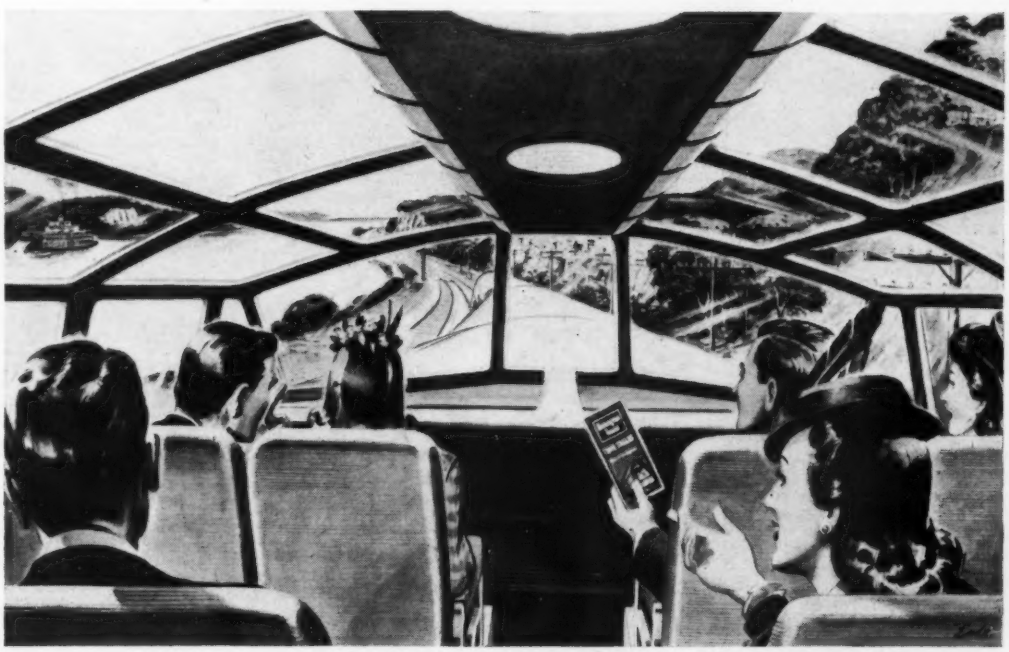
Modern American Passenger Stock



An artist's impression of the general exterior view of a passenger coach with glass-enclosed observation dome, designed for use on the Chicago, Burlington & Quincy Railroad



Interior view of the dome. Besides providing better observation, the dome increases the seating capacity of the coach from 52 to 58 passengers

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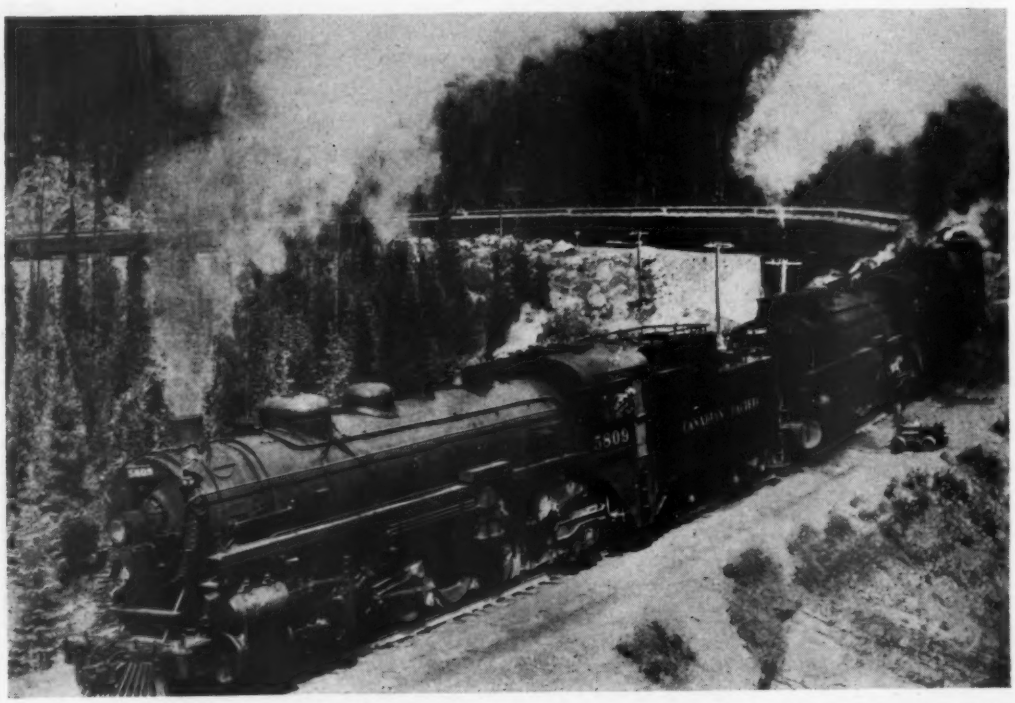
Scenes on the Canadian Pacific Railway

A C.P.R. train on a curved embankment in the neighbourhood of Lake Superior



Santa Fe 2–10–2 locomotive No. 5809 heading a C.P.R. train in the Kicking Horse Pass near Field, British Columbia

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RAILWAY NEWS SECTION

PERSONAL

Sir Alexander Galloway Erskine-Hill has been appointed Deputy-Lieutenant of the City & County of Edinburgh. He is a Director of the London & North Eastern Railway Company.

SOUTH AFRICAN RAILWAYS & HARBOURS

Mr. J. G. J. Seabrook, Superintendent (Operating), Johannesburg, has been appointed Chief Superintendent (Operating), in succession to Mr. J. Ramsay, who has retired.

The late Mr. H. M. Thompson, Recorder of Belfast, and County Court Judge for Antrim, 1921-41, who in 1938 conducted the public inquiry into the operation of the Northern Ireland Road & Railway Transport Act, 1935, left personal estate in Great Britain and Northern Ireland valued at £21,508.

INDIAN RAILWAY STAFF CHANGES

Khan Bahadur Z. H. Khan has been appointed to officiate as Director, Establishment II, Railway Board.

Mr. W. R. Maunder, Chief Engineer, B.B.C.I.R., has been appointed to officiate as General Manager, in place of Dr. H. J. Nichols, granted leave.

Mr. E. Hudson has been appointed to officiate as Deputy Locomotive & Carriage Superintendent, B.B.C.I.R.

Rao Bahadur M. A. Asrani has been confirmed permanently as Deputy Chief Engineer, E.I.R.

Mr. H. Holt-Keene has been appointed to officiate as Chief Electrical Engineer, G.I.P.R.

Mr. E. L. Roberts has been confirmed permanently as Chief Operating Superintendent, M.S.M.R.

Mr. S. B. Deshpande has been appointed to officiate as Chief Electrical Engineer, N.W.R., in place of Mr. H. W. Puttick, on leave preparatory to retirement.

Mr. Yakub Shah, Financial Adviser & Chief Accounts Officer, B.A.R., has been appointed Financial Adviser & Chief Accounts Officer, N.W.R., in place of Mr. G. H. A. Wood, appointed Director, Railway Audit, Government of India, Simla.

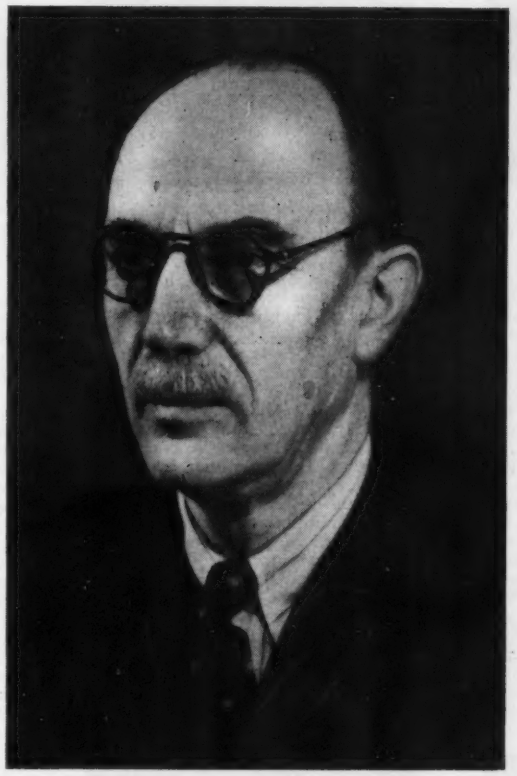
Mr. R. G. Bhatawadekar has been appointed Metallurgist, N.W.R., in place of Mr. N. Hackney, on leave preparatory to retirement.

Mr. G. C. Trehan has been appointed to officiate as Deputy Chief Engineer, N.W.R., on Special Duty.

Major J. J. Harding has been appointed to officiate as Deputy Chief Mechanical Engineer (Works), S.I.R.

The list of promotions in, and appointments to the Venerable Order of the Hospital of St. John of Jerusalem, published in *The London Gazette* of June 22, 1945, includes the following:—As Knights, The Rt. Hon. Sir David John Colville, G.C.I.E., T.D.; as Commanders (Brothers), Sir Charles Henry Newton; as Officers (Brothers), Lieut.-Colonel Ralf Billing Emerson, C.I.E., R.E., Mr. Robert John Mathieson Inglis, C.I.E.

Mr. Walter Treweeke Biscoe, V.D., lately Regional Controller, Railway Priorities, North West Region of India, who, as recorded in our November 10, 1944, issue, has been appointed Chief Operating Superintendent, North Western Railway, India, was born at Quetta in 1892, son of Mr. C .L. Biscoe, who was Traffic Superintendent; N.W.R., from 1905 to 1909. Mr. W. T. Biscoe was educated at Marlborough (1905-09), and sailed for India in May, 1910. In October of that year he was posted as Probationary Assistant Traffic Superintendent, N.W.R., at Karachi. In the next year he was sent to Delhi in connection with the Delhi Durbar; he was awarded the Delhi Coronation Durbar Medal. In October, 1914, Mr. Biscoe went to East Africa with Expeditionary Force B. He was second-in-command of an armoured train which had been taken over from India; later he commanded the North Western Railway Machine-Gun Company in East Africa. In 1916 he became Railway Transport Officer at railhead, and later was Assistant Manager of the Voi military railway. He was commended for gallant and distinguished services in the field. On his return to India in March, 1917, he had a period as Captain of the Embarkation Staff at Bombay. In October, 1918, he was recalled to railway service, and was posted as Assistant Traffic Superintendent at Bannu, where he worked under Mr. B. F. Martin, Superintendent of the Kalabagh Bannu Railway (N.W.R.). Between December, 1930, and June, 1935, Mr. Biscoe was in the U.S.A. as Resident Manager, Indian Railways Publicity Bureau in New York. After his return to Lahore in February, 1936, he was Sales Manager, N.W.R., for a short time before becoming Deputy Chief Commercial Manager. Then he was for six years Divisional Superintendent, one year at Ferozepur, and five at Lahore. In 1942 he became Regional Controller, Railway Priorities, North West Region of India; and in 1944, when Mr. B. Moody proceeded on leave preparatory to retirement, Mr. Biscoe took over as Chief Operating Superintendent.



Mr. W. T. Biscoe

Appointed Chief Operating Superintendent, North Western Railway, India

ASSOCIATION OF CONSULTING ENGINEERS

Mr. James R. Beard, Senior Partner of Merz & McLellan, and Past-President of the Institution of Electrical Engineers, has been elected Chairman of the Association of Consulting Engineers for 1945-46. The following have been elected recently Members of the Association: Messrs. G. R. Allen, G. M. Binnie, J. D. Bird, G. H. Buckle, J. T. Calvert, Sir Frederick Charles Cook, Messrs. J. W. Gardom, R. W. Hawkey, E. S. Hoare, H. R. Keyter, S. G. Redman, H. A. Sandford, Harold Taylor, F. P. Viljoen, Guthlac Wilson.

CANADIAN NATIONAL RAILWAYS

Mr. F. P. Nelson, Freight Traffic Manager, Central Region, Toronto, has retired, and has been succeeded by Mr. C. W. Wells.

Mr. J. A. Argo, formerly General Freight Agent, Montreal, has been appointed General Freight Agent, Toronto, in succession to Mr. C. W. Wells.

Mr. G. S. Reid has been appointed Auditor of Passenger Accounts, in succession to Mr. A. S. Mitchell, who has retired.

Major H. R. Kilner, M.C., Managing Director (Aviation) of Vickers-Armstrongs Limited, has joined the Board of Vickers Limited.

Mr. L. I. G. Leveson, B.Sc., has been appointed a Director of Vickers-Armstrongs Limited.

Mr. Rupert E. Kimberley, M.I.Loco.E., who, as recorded in our May 4 issue, has retired from the position of Chief Mechanical Engineer of the Buenos Ayres & Pacific Railway, commenced his engineering career with Joseph Evans & Sons, of Culwell Foundry, Wolverhampton. After five years he obtained a position on the technical staff of the Chief Locomotive Superintendent's Department of the Midland Railway; he also studied mechanical engineering at Nottingham University College. In 1907 he joined the Buenos Ayres & Pacific Railway, and was attached to the Running Department for a number of years. In 1917 Mr. Kimberley was appointed Works Manager at the Alianza Workshops, and four years later was transferred to Mendoza as Divisional Locomotive Superintendent in charge of the Shops & Traction Section and had under his control the Shops & Traction Section of the Argentine Transandine Railway. He later was transferred as Assistant

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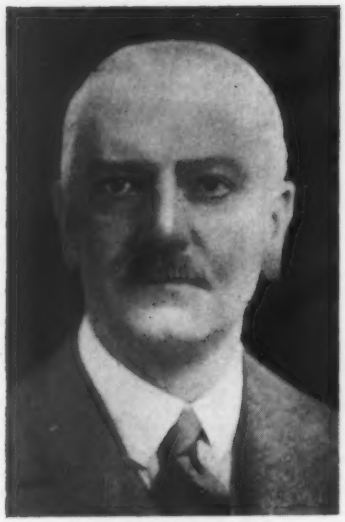

Mr. R. E. Kimberley

Chief Mechanical Engineer, Buenos Ayres & Pacific Railway, 1927-45

Mr. Frank Grundy

Appointed District Goods Manager, Wolverhampton, L.M.S.R.

Mr. D. D. Bartlett

Appointed Assistant Divisional Superintendent, Bristol, G.W.R.

to the Traction Representative in Buenos Aires, and to the General Manager's staff in a technical advisory capacity. In 1927 he was appointed Chief Mechanical Engineer. Some seven years later the Traction Section of the railway, which had been under the jurisdiction of the Traffic Department, was absorbed by the Mechanical Department; and in 1931 the Electrical Department had ceased to be a separate department and had been placed under the control of the Chief Mechanical Engineer. Mr. Kimberley was one of the founding members of the South American Centre of the Institution of Locomotive Engineers; he served as Honorary Treasurer for four years, and was Chairman of the Centre during 1929 and 1930. In connection with the development of diesel traction and to obtain first-hand information on diesel engine design and transmission, Mr. Kimberley has travelled extensively in Europe, and not only has visited many diesel manufacturers but also has studied diesel locomotive performance on various railways.

Mr. Frank Grundy, A.M.Inst.T., Assistant to Chief Commercial Manager (Goods), Watford, H.Q., L.M.S.R., who, as recorded in our May 4 issue, has been appointed District Goods Manager, Wolverhampton, entered service of the former Lancashire & Yorkshire Railway at Bury in 1915. He served in the R.N.V.R. from 1917 to 1919, and, after training at stations and district offices, joined the Chief Goods Manager's staff at Euston in 1925. He worked in various headquarters sections from then until 1933, when he joined the then newly-formed Chief Commercial Manager's Research Section. In 1938 Mr. Grundy went to the L.M.S.R. staff college at Derby, and later in the same year became Goods Agent at Accrington. Thereafter he held positions as Goods Agent, Bury (1939-41); Assistant to District Goods Manager, Bolton (1941-43); Head of Merchandise Services Section, Chief Commercial Manager's Office (1943); and Goods Agent, St. Pancras & Somers Town (1943-44). He was appointed Assistant to Chief Commercial Manager (Goods) early in 1944. Mr. Grundy's services were loaned for a period during the war in Europe to the Ministry of Food; he served as Assistant Director of Transport, and Deputy Divisional Food Officer (North West), responsible for transport and warehousing.

Mr. D. D. Bartlett, Assistant Divisional Superintendent, Gloucester, Great Western Railway, who, as recorded in our June 8 issue, has been appointed Assistant Divisional Superintendent, Bristol, entered the company's service in 1930, and obtained experience in the Plymouth and London Divisions, and in the Office of the Superintendent of the Line. In 1937 he com-

Mr. H. Warren

Appointed Managing Director of the British Thomson-Houston Co. Ltd.

Mr. B. d'A. Patterson

Appointed Personnel Officer, Irish Transport Company

Mr. I. R. Cox

Appointed Managing Director, Metropolitan-Vickers Electrical Co. Ltd.

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menced a special course of training. On the outbreak of war he was engaged for a year in the Military Section of the Office of the Superintendent of the Line, and subsequently in the office of the Railway Executive Committee. He was appointed a travelling clerk in February, 1941, and Junior Assistant to the District Traffic Manager, Plymouth, four months later. He became Chief Clerk at Gloucester in October, 1941, and was appointed to a similar position at Bristol in 1942. Mr. Bartlett returned to Gloucester as Assistant Divisional Superintendent in 1943.

Mr. H. Warren, M.Sc., M.I.E.E., M.I.A.E., Director of Research & Engineering of the British Thomson-Houston Co. Ltd., who has been appointed Managing Director, is 53 years of age. He went from Bristol University to the company (in the Testing Department) in 1911, and was appointed to the engineering staff in 1913. In 1921 he became Engineer of Insulations and in 1923 he collaborated with the late Mr. R. C. Clinker in instituting the B.T.-H. Research Laboratory. In 1929 Mr. Warren became Chief of the Research Laboratory, and in 1938 he was elected to the board of the company as Director of Research. Recently he was appointed Director of Research & Engineering, and now, on Mr. H. N. Sporborg's retirement, he becomes Managing Director. In addition to his responsibilities for research and engineering, Mr. Warren has been for many years in charge of the company's technical education and training system ; he has fostered a close relationship with the universities, and with the Rugby College of Technology & Arts ; and has been associated with numerous technical committees connected with the companies of Associated Electrical Industries Limited, and with outside committees. He is a member of the Electrical Research Association Council, and of several committees of the British Electrical & Allied Manufacturers' Association, and of the British Standards Institution, as vice-President of the Institute of the Plastics Industry, and Vice-President of the Midland Centre of the Institute of Physics. Mr. Warren is the author of numerous technical books and papers. He has travelled extensively on the Continent and in America, studying technical matters. During the war he has directed much special research, development and engineering work executed by his company for H.M. Government. He is a member of the Government Radio Research Board.

Mr. Brian d'Arcy Patterson, formerly District Locomotive Superintendent of the Great Southern Railways in Dublin, who, as recorded in our June 22 issue, has been appointed Personnel Officer of the Irish Transport Company, after leaving Blackrock College, Dublin, in 1932, served his apprenticeship at Inchicore, Great Southern Railways. He was appointed Engineering Assistant in the Running Superintendent's Office there, and later became District Locomotive Superintendent, Dublin. As Personnel Officer he will be concerned with problems of employment, education and training, as well as with questions of staff welfare.

Mr. I. R. Cox, D.S.O., General Sales Manager of Metropolitan-Vickers Electrical Co. Ltd., who, as recorded in our June 15 issue, has been appointed Managing Director, went to that company as a college apprentice, and at the termination of his apprenticeship in 1913 was appointed Assistant Turbine Engineer. He joined the Army in 1914, and from then until 1919 he served in France, Egypt, Palestine and Salonika. He was throughout with the Royal Artillery, in which he ultimately commanded a brigade, and he retired with the rank of Major. He was mentioned twice in dispatches, and was decorated with the D.S.O. and the Croix de Guerre. On returning to the Trafford Park Works in 1919, Mr. Cox worked as Turbine Engineer until 1927, when he went to Russia as Chief Mechanical Engineer for the company, in charge of turbine work in that territory. He afterwards visited Australia and America on the company's business.

Mr. Andrew Graham has been appointed Engineering Representative for Eire of Specialloid Limited. Mr. K. D. West has been appointed District Engineer for the Southern Counties, operating from Guildford, and assisting Mr. W. G. P. Rogers, Manager for the territory. Mr. Gordon Ramsden has taken up his post as Area Manager & Engineer for Yorkshire, Northumberland & Durham, operating from Leeds, and Mr. T. Bimson, who has been in charge of that territory while awaiting the opportunity to leave for overseas, has now made arrangements for commencing his activities in Europe.

Mr. J. C. A. Whitworth, Chief Clerk to the Divisional Superintendent, Gloucester, Great Western Railway, who, as recorded in our June 8 issue, has been appointed in a similar capacity at Swansea, entered the company's service as a special trainee in June, 1937. He was attached to the Passenger Train Section of the Office of the Superintendent of the Line, in April, 1939, for two and a half years, and was appointed Junior Assistant to the Divisional Superintendent at Chester in October, 1941. Mr. Whitworth became Chief Clerk to the Divisional Superintendent, Gloucester, in 1942.

The Order of the Nile

Among those to whom the King recently has granted His Majesty's Royal licence and authority to wear Decorations of the Order of the Nile conferred on them by His Majesty the King of Egypt, in recognition of valuable services rendered by them, are the following officers of the Sudan Railways:—

Decoration of the Fourth Class

Messrs. Charles Mackinnon, Maintenance Engineer; Charles Harold Hill, Chief Mechanical Engineer; Robert Mervyn Cummins, Port Manager, Port Sudan.

Decoration of the Fifth Class

Messrs. Edwin Stanley Brown, Inspector; Alfred George Curme, Assistant to District Engineer, Permanent Way; James Carney, Superintendent of Stores; Frederick Allan Goddard, District Locotive Superintendent (South); John Thomson, Superintendent, Concrete & Creosoting Department.

Señor Eduardo I. Rumbo, who was appointed Interventor in the Argentine National Railway Board on May 30, 1944, has resigned.

Institution of Mechanical Engineers

Among those recently transferred from associate membership to membership of the Institution of Mechanical Engineers are Mr. W. E. Gelson, Deputy General Manager (Works), Bengal & Assam Railway; Mr. Harold Rudgard, Superintendent of Motive Power, L.M.S.R.; and Lt.-Colonel R. L. Tanner, Works Manager, Jamalpur, East Indian Railway. Those recently elected include Mr. R. W. Woolocott, Assistant to Chief Mechanical Engineer, Great Western Railway (as Member); and Mr. T. J. Good, Chief Mechanical Engineer's Drawing Office, Bengal & Assam Railway, and Mr. J. S. Horne, L.M.S.R., Horwich (as Associate Members).

Mr. E. G. Garstang, M.Inst.T., District Goods Manager, Manchester, L.M.S.R., is retiring at the end of July.

In connection with the company's reorganisation for post-war conditions, Mr. J. Hedley Jones has been appointed Representative in South Wales of Hadfields Limited. Mr. Jones was Chief Engineer at the company's Hecla Works during the war in Europe.

The following officers of the Baldwin Locomotive Works of Canada Limited (the wholly-owned subsidiary of the Baldwin Locomotive Works, of the U.S.A.), reference to the formation of which was made in our June 15 issue, were elected recently: Messrs. Ralph Kelly, President; W. Horace Holcomb, Vice-President; W. N. Brownlie, Managing Director; H. D. Humphreys, Secretary & Treasurer; T. E. McFalls, Assistant Secretary & Assistant Treasurer. All except Mr. Brownlie are officers of the parent company.

Mr. E. Roberts, Assistant Traffic Manager, has been appointed Traffic Manager of Crosville Motor Services Limited, in succession to Mr. H. H. Merchant, who recently was appointed General Manager of the Caledonian Omnibus Co. Ltd.

Mr. George F. French, previously Director & General Manager, Maidstone & District Motor Services Limited, has been appointed Managing Director.

The late Mr. A. D. Mackenzie, who was Executive Director of Southdown Motor Services Limited, left £34,832.

Mr. C. N. Goodall, for health reasons, is retiring from the board of Robert Stephenson & Hawthorns Limited.

The services of Mr. R. E. B. Lee, Auditor of Revenue, Victorian Government Railways, have been lent to the Federal Department of Works for an indefinite period for special investigation work. During his absence, Mr. C. J. Savage will act as Auditor of Revenue.

The directors of Crompton Parkinson Limited have appointed as Executive Directors Mr. B. Moore and Mr. R. E. P. Briebach. Mr. Moore is at present Works Director at Guiseley, and Mr. Briebach is General Manager of the Lamp Works.

Mr. J. B. Colwill, Chief Clerk to the Divisional Superintendent, Swansea, Great Western Railway, who, as recorded in our June 8 issue, has been appointed Assistant Divisional Superintendent, Swansea, entered the Divisional Superintendent's Office as a lad clerk in 1908, and occupied positions in the Staff, Goods Train and New Works Departments, between 1911 and 1934. He became Chief Correspondence Clerk in May, 1939, and was appointed Staff Clerk in April of the next year, and Chief Clerk in 1942.

TRANSPORT SERVICES AND THE WAR—300

Permits for Orkney

The War Office announced on June 7 that permits are no longer necessary for persons entering the Shetland Islands. Orkney remains a Protected Area, and permits to enter there are still necessary.

Services to the Channel Islands

Steamship services between Southampton and the Channel Isles, which have been suspended since the German occupation of the islands in July, 1940, were resumed by the Southern Railway from Monday last, June 25. The outward services leave Southampton on Mondays, Wednesdays, and Fridays; the inward services arrive on Tuesdays, Thursdays, and Saturdays. The crossings are made at night. Traffic is restricted to repatriated and compassionate cases, and authority to travel must be obtained from the Passport & Permit Office.

Jersey Airways Limited reopened civil air services between the Channel Islands and the United Kingdom on Thursday, June 21. The routes are Jersey, Guernsey, Croydon, with two services each way daily, including Sundays. The service is intended for the return of refugees to the islands and for repatriates rejoining their families on the mainland. Exit permits are necessary.

It is hoped within a few weeks to reopen services between Southampton and the Channel Islands.

Demobilisation Trains

In connection with the demobilisation scheme which came into force on Monday, June 18, centres were set up at the following places: Edinburgh, York, Ashton-under-Lyne, Northampton, London, Guildford, Hereford, Taunton, and Belfast. Five special trains were arranged to run daily, including Sundays, between certain of these centres to accommodate the maximum number of personnel possible. For destinations not served by the special trains, a certain number of compartments was reserved daily by booked ordinary service. Details of the special trains are as follow :—

SPECIAL DEMOBILISATION TRAINS
Daily including Sundays

		p.m.
Taunton	dep.	6 55
Hereford	arr.	10 25
	dep.	10 35
Shrewsbury	arr.	11 59
		a.m.
	dep.	12 20
Ashton (Charlestown)	arr.	2 4
	dep.	2 20
York	arr.	4 10
	dep.	4 20
Edinburgh (Waverley)	arr.	9 21

		p.m.
Edinburgh (Waverley)	dep.	6 5
York	arr.	11 20
	dep.	11 35
		a.m.
Ashton (Charlestown)	arr.	2 7
	dep.	2 22
Hereford	arr.	5 58
	dep.	6 8
Taunton	arr.	9 43

		Week-days	Sundays
		p.m.	p.m.
Kensington (Addison Road)	dep.	10 35	10 30
		a.m.	a.m.
Northampton (Castle) ...	arr.	12 2	12 4
	dep.	12 12	12 14
York	arr.	4 0	4 0

		p.m.
York	dep.	11 45
		a.m.
Wellingborough (Midland Road)	arr.	3 26
	dep.	3 32
St. Pancras	arr.	5 15

		a.m.
Wellingborough (Midland Road)	dep.	3 41
Northampton (Castle)	arr.	4 3

The through trains to and from Edinburgh connected at York with those to and from London, but the London-York services were cancelled as from June 25; the other services continue to July 1.

The essence of the scheme is that all personnel proceed first to a Collecting Unit, where they are sorted out and despatched in parties for the Demobilisation Centre nearest their home town, and it is at this point that the final " demob " is effected.

Rail to Mandalay

The first train steamed into Mandalay Station on June 4, according to a New Delhi radio announcement.

Austrian Railway Traffic with Switzerland

Repairs to the railway bridge over the Bregenzer Ache having been completed, train services on the Arlberg line into Bregenz have been resumed. A Swiss report of June 4 states that services are also being restored on the connecting line between Bregenz and St. Margrethen, the Swiss frontier station on the main line for St. Gall and Zurich. The distance between Bregenz and St. Margrethen is 8 miles.

First German Goods Train at Basle

The first goods train from Germany to cross into Swiss territory after the collapse of Germany arrived at Basle Reichsbahn Station on June 1. It was said to have originated at Grenzach, 3 miles to the east of Basle Reichsbahn Station, on the main line skirting the northern (German) bank of the Rhine. Soon after its arrival at the Reichsbahn goods yard at Basle, it was seen by our correspondent to continue its journey in a northerly direction on the Basle to Freiburg i. Breisgau main line.

German Railway Restoration

About half the German railway network in the Anglo-American occupation zone is usable again, according to a Radio Luxembourg announcement on June 17. The important line connecting the Rhineland with Hamburg is in working order.

During the past two months the 718th U.S.A. Railway Operating Battalion has been repairing vitally-needed railheads and track inside American-occupied Germany. German locomotive and wagon-repair facilities are being used to the utmost. German railway lines are now being operated on limited schedules in many sectors of American-occupied Reich; two lines were opened as long ago as May 1 under the supervision of the 718th Railway Operating Battalion. These are manned entirely by German railwaymen whose reliability has been established; the status of all Germans used on the railways is checked closely. With permission granted that they could be employed on the railway in their old jobs, many have returned for work. A German director and two assistants, nominated by Military Railway Service authorities, were appointed on the understanding that they are to be liable personally for any sabotage attempted by the civilian workers. To date all lines are running smoothly and no trouble has been encountered.

Since the beginning of June a shuttle service between the British and Russian zones has been functioning, with 14 trains at the disposal of the military authorities for the exchange of deportees.

Railway traffic is also being restored rapidly in Soviet-occupied Germany, said the Moscow Radio on June 14. Soviet railway troops, assisted by German railwaymen and labourers, are concentrating first on the main lines connecting the large industrial centres. In Berlin itself, the Dresden, Templehof, and other stations can already handle large numbers of passengers. German workmen, directed by Soviet railway officers, are quickly repairing tracks and other stations.

In the French Area limited goods services have been working since May 28 on the Schaffhouse (Switzerland)-Singen main line, 12 miles. Singen is an important junction on the Constance-Tuttlingen main line, 25 miles south of Tuttlingen. French goods traffic for supplies to the French Occupation Forces in Southern Germany thus has alternative routes available for connection with Switzerland, where a France-Geneva-Schaffhouse transit route has been established. The French are endeavouring to restore to working order the main line between Basle and Schaffhouse as rapidly as possible. This line follows the northern (German) bank of the Rhine; only in Basle (Reichsbahnhof) and for short sections to the west and east of Schaffhouse is it located in Swiss territory. The distance between Basle (Reichsbahnhof) and Singen is 83 miles. This route would free the French from the necessity of sending their supplies from southern France across the whole of Switzerland although it would still mean to use short sections of Swiss lines, between Basle Central Station and Basle Reichsbahnhof. The line crossing the Schaffhouse region of Switzerland between Erzingen (in the west) and Thayingen (in the east) although in Switzerland is actually a Reichsbahn line.

Resumption of Italian Railway Traffic

On the 95-mile Turin—Milan main line, which is steam-operated, train services were resumed on June 1, after the completion of temporary repairs near Santhià. Only three stopping trains a week are operated in each direction, because of coal shortage.

Train services on the 31-mile Bologna—Faenza section of the Bologna—Ancona main line were also resumed on June 1. At the same time it was stated that it will take a considerable time to restore to working order the Bologna—Milan main line (136 miles). Traffic is unlikely before the end of August or the early part of September, because of the heavy work involved in the reconstruction of the long bridge crossing the River Po to the north-west of Piacenza, which is taking longer than was thought at first. Before repairs are completed, communication between Bologna and Milan will be organised *via* Verona (71 miles), and thence over the 92-mile section between Verona (Porta Nuova) and Milan Central of the Milan—Venice main line. Even this roundabout route will not be available before the middle of July, and then only for steam traffic, as the Germans removed the overhead wires on the Bologna—Verona section (electrified in 1941) to meet their own copper shortage.

In connection with the Genoa—Milan main line, to which we made reference in our June 22 issue (page 627), we now learn that direct communication was resumed early in June, but that two changes of train are necessary, as the repairs to the two bridges concerned are not yet complete. It now takes some 8 hours to cover the 94 miles between Genoa and Milan, compared with 2 hr. 20 min. in 1942.

The double-track *direttissima* main line between Bologna and Florence is stated to have its main tunnel intact, b only one track through it available for traffic.

The Railway Situation in France

(From Our Paris Correspondent)

Railway transport facilities in France continue to improve and press reports indicate that the French National Railways Company (S.N.C.F.) will soon be in a position to cope with more traffic than is likely to be forthcoming in the present paralysed state of the nation's main industries. The S.N.C.F. has now 7,190 locomotives in working condition, including 470 furnished by the Allies. In addition, 5,612 damaged engines are being repaired. In 1939 the number of locomotives totalled 17,000.

More than 260,000 wagons are now available and 40,000 damaged wagons are undergoing repairs, of which 20,000 will be ready for service by the end of the year. The recent rapid rise in the total is due to the return of many wagons from Germany; the Americans have placed 50,000 at the disposal of France, and about 20,000 foreign wagons have been brought in. Orders for numerous new wagons are also included in the French reconstruction plans. Great difficulty has been encountered in providing coaches for passenger trains, but negotiations are in progress for the return of French railway carriages which are still in Germany.

Rail and Road Transport Crippled

Rail and road transport services in France were completely crippled by the military operations last summer. French railway engineers had to face catastrophic conditions, due to the devastating Allied bombing of the lines and the further wrecking of bridges, signal boxes, and locomotives by the retreating Germans, who also seized all available road trucks, making road transport for food supplies to Paris and other centres almost impossible.

M. Réne Mayer, Minister of Public Works & Transport, in a recent statement said that in 1944, 115 large railway stations were destroyed; 1,860 miles of lines rendered unusable 7,500 locomotives and 80,000 wagons damaged or destroyed. The daily goods traffic in August fell to 2,700 wagons loaded, against 43,000 in 1939. Information from other sources shows that 15 of 19 large marshalling yards were put out of use, 18 large engine depots destroyed, 27 seriously damaged, and 11 slightly. Many repairing shops were also wrecked.

Reconstruction Work Goes Ahead

In tackling the difficult tasks of reconstruction, the French engineers were aided by willing railwaymen, who voluntarily worked 54 hours a week instead of the normal 48. In some sections of the country they also received help from the United States Transportation Corps in the repairing of lines and in the provisional reconstruction of bridges. Shortage of raw materials was a great obstacle in the work. The ingenuity of the workers overcame many difficulties. They used wrecked locomotives as a source of material in repairing damaged engines; welders with blowpipes cut out any parts they needed.

Reconstruction work made good headway through the hard winter and, as far as material allowed, many of the disused lines had been provisionally restored and equipped with adequate signalling apparatus by the spring. Rolling stock repaired included 4,000 locomotives, 11,000 carriages and vans, and 200,000 wagons. In the repair work the great main-line bridges over the Seine, the Loire, the Dordogne, and other rivers presented formidable problems. Destruction of the bridge over the Loire at Orleans completely cut the traffic between Paris and Bordeaux, as well as the rest of south-western France.

Rebuilding Wrecked Bridges

Ten of fourteen arches of the bridge at Orleans had been destroyed, but by November 21, 1944, traffic was resumed. Previously trains from Paris to Bordeaux were dispatched *via* Montauban and the journey took 19 hr., but after the rebuilding of the bridge over the Dordogne at Libourne, 4 hr. were gained by sending trains *via* Vierzon and Tours. The journey *via* Orleans and Tours now takes less than 12 hr. Reconstruction of the Montlouis Bridge over the Loire near Tours was completed by February 11 and provided another direct connection between Paris and Bordeaux. Floods, frost, and snow made the work of rebuilding this bridge 400 metres (438 yd.) long with 12 arches a most difficult feat.

Bombed six times and then blown up by German mines, the bridge at Maintenon over the Voise near Chartres on the line from Paris to the West had 22 of 32 arches demolished at the end of August. The structure 320 metres (350 yd.) long was reduced to a chaotic mass of concrete, steel girders, and twisted rails, blocking the river and converting the valley into a marshy condition. Four hundred men were put on the job of rebuilding and by working day and night they finished ten days ahead of scheduled time and the provisional bridge was opened for traffic on November 21. Despite all obstacles, the French engineers succeeded in restoring 1,550 bridges in five months.

Military Railway Transport

As railway communication was restored military needs naturally took precedence. Civilian requirements were set aside as far as possible and for some time passenger traffic was almost entirely suspended. War material and various army supplies at the rate of more than a million tons a month were transported by the French railways. General goods traffic is now increasing. For the week ended June 1 the total loadings were 109,920 wagons, but this total represents little more than 30 per cent. of the pre-war figures. It relates, however, exclusively to civilian goods traffic. For the preceding week, including the Whitsun holiday, the loadings were 94,907 wagons.

Comprehensive plans for construction of greatly improved light rolling stock are relegated to the background at present by the pressure of circumstances, but the S.N.C.F. is going ahead with electrification. New lines totalling 2,032 km. (1,262 miles) are to be electrified, bringing the total for all France up to 5,563 km. (3,455 miles). The saving of coal by this electric traction is put at 2,700,000 tons a year. The Paris-Lyons-Marseilles line forms the most important part of the electrification scheme. Passenger trains on the electrified line will run at an average speed of 140 km. (87 miles) an hour. Light trains will then do the journey of 512 km. (318 miles) from Paris to Lyons in 4 hr. 34 min., or 1 hr. 20 min. less than in 1938.

Between Paris and Marseilles the tracks are to be quadrupled except for the section St. Florentin to Dijon. Because of the narrow tunnel at Blaisey-Bas near Dijon, it is impossible to run four tracks in this section. But the S.N.C.F. engineers will make the existing two tracks equivalent to four by a system of cross-overs between the up and down lines, which will enable trains to run on the up or down tracks indifferently, crossing from one to the other at a speed of 80 km. (49 miles) an hour. Manual-signalling apparatus will be superseded by an automatic-electric block system indicating for each 1,500 metres (1,640 yd.) whether the line is free or not.

Transport conditions by rail and road gradually are improving. Containers for liquids are in demand, especially for conveyance of wine from the South of France and Algeria to Paris. Fifteen thousand tank wagons were destroyed during the war and are now much needed, as wooden casks are going out of use, because their upkeep is too costly. Present plans are to begin the construction of tank containers with a capacity of 40 hectolitres (880 gal.) adapted for use on rail trucks or boats running between France and Algeria. For road trucks the problem is similar. It is estimated 100 tank trucks are needed for supplying retail traders in Paris and 600 for the provinces.

Beyer, Peacock & Co. Ltd.

The annual general meeting of Beyer, Peacock & Co. Ltd. was held at the Park Lane Hotel, London, W.1 on, June 26. Captain Hugh Vivian, M.I.Mech.E., Chairman of the company, presided.

The Chairman, in his statement circulated with the report and accounts, said that work in progress, stocks, debtors, creditors showed little change and the bank overdraft was less by £50,000. There was one important point in the balance sheet under the heading of profit and loss account to which he would direct attention. The preference dividends paid had been shown net, that was, after the deduction of tax, whilst the profit for the year had also been shown exclusive of tax on the above dividends. To preserve comparison, however, the figure for the previous year on the credit side of the profit and loss account under "Balance from Trading Account, etc.," had also been shown net. It would be seen, however, that the amount carried forward on profit and loss account in the balance sheet at £71,762 was comparable with the figure for the previous year.

The company's manufacturing facilities had been fully employed within the limitations imposed by availability of suitable labour. H.M. Government transportation demands on the locomotive industry during 1944 had been of high priority for various theatres of war. In addition to the outstanding locomotive requirements of H.M. Government, the company's current order book included several commercial contracts for countries overseas.

The assets of the company and its subsidiaries had been maintained subject to production demands. In cases where maintenance had been postponed, reserves had been created to meet future commitments. The Chancellor's recent statement regarding concessions to assist industry in the rehabilitation of plant and machinery, in his opinion, was too limited to meet all the needs of this serious problem.

With hostilities in Europe at an end and

the relaxation of many forms of control inevitable during the war years, the company was entitled to expect the gradual establishment of conditions which would encourage the expansion of export trade.

The repercussions of E.P.T. legislation on the locomotive industry had been far-reaching. The effect on the company in particular had been both severe and harsh. The directors looked forward to substantial taxation relief for industry in the Chancellor's supplementary budget statement promised for the autumn.

To the dependents of employees who had laid down their lives on active service they offered most sincere sympathy, and wished a safe and speedy return to those employees still serving with H.M. Forces.

It was impossible for him to attempt to forecast the precise course of future events, but post-war plans for the company had received the fullest possible consideration.

The report and accounts were adopted.

The British Electric Traction Co. Ltd.

The ordinary general meeting of the British Electric Traction Co. Ltd. was held on June 22 at Winchester House, Old Broad Street, E.C.2. Mr. Richard J. Howley, C.B.E., Chairman of the company, presided.

The Secretary, Mr. R. P. Beddow, having read the notice convening the meeting and the auditor's report,

The Chairman said that revenue for the year ended March 31, 1945, amounted to £779,608, an increase of £11,646 over the preceding year. The expenses showed little change, except in the case of income-tax which this year required £317,791, an increase of £5,114. The amount available this year for appropriation was £323,737, compared with £316,441 for the previous year; and after paying the same dividends as for last year there would remain a balance of £62,110 to be added to undivided profits account.

Total investments stood in the balance-sheet at £6,925,442, an increase of some £130,000. The general investments at £1,790,473 showed a small reduction. Cash at short call and at bankers amounted to £451,942, a reduction of some £59,000.

Now that the war in Europe had been brought to a successful conclusion, it was a fitting occasion to review the changes which had taken place in the company's financial position since its last pre-war financial year—namely, the year ended March 31, 1939.

Taking first the main items of the profit and loss account, the gross revenue for the year 1944-45 was £779,608, as compared with £728,513 for 1938-39, an increase of £51,095. There was, however, an increase in income-tax for 1944-45 of £158,339, and a decrease of £103,918 in the balance of £323,737 available for appropriation. In 1938-39 the proportion of income-tax to gross revenue was 22 per cent.; in 1944-45 it had risen to 42 per cent.

Turning to the balance-sheets, the amount of debenture stock issued was the same in both years—namely, £1,620,012. The capital was £2,757,873 in March, 1939, and £2,829,760 in March, 1945; the difference is accounted for by a stock bonus amounting to £71,887 which was satisfied by the allotment of deferred ordinary stock in June, 1939.

Investments showed but little change. The cash at bank this year amounted, however, to £451,942, as compared with only £31,100 in March, 1939. In addition, the bank loan of £155,000 held in March, 1939, had been repaid, so that the total improvement in the cash resources amounted to no less than £575,842.

The balance at credit of undivided profits account had been built up out of revenue from £1,932,724 in March, 1939, to £2,323,318 in March, 1945. If this latter figure was added to the general reserve of £520,000, there resulted a total of £2,843,318, which for the first time exceeds the issued capital of £2,829,760.

Generally, therefore, the picture showed that although the incidence of a much higher rate of taxation had reduced the balance available for appropriation, substantial amounts had been carried to undivided profits during the past six years, and that with a strong liquid position the Board would be able to face with confidence the difficult years ahead.

The bus undertakings associated with the B.E.T. now operated a total fleet of just over 9,000 public service vehicles. During 1944 the vehicles ran an aggregate of approximately 240 million miles, carried 1,500 million passengers, and the gross receipts amounted to £21,500,000. The figures were much the same during the other war years, and illustrated the magnitude of the transport services which the associated companies had been able to provide. The undertakings had had to face many difficulties, but these had been overcome and great credit was due to the managers, executive officers, and the operating staffs for the way in which they have carried out their duties. Over 11,000 employees, or about 30 per cent., were called up under the National Service Acts. Of these, 576 had been killed or were "missing" or were taken prisoner, and 961 were invalided out. Five thousand, five hundred and sixty-five have at one time or another been in receipt of allowances from the companies. So far 55 men had been awarded decorations.

Throughout the war the associated companies had provided supplies of electricity for many essential wartime purposes, and during 1944 they sold a total of close on 330 million units.

The company was about to face a difficult and anxious time in settling down to peace conditions. Wages and the cost of all the materials it used had risen to new high levels. Fortunately, while the war had lasted, the takings on the bus services had increased very considerably, and it had been possible to meet the rising costs as they came along. Now that the war with Germany had ended, the public would not, and could not be expected to, put up with the discomfort and overcrowding of the past five years. The industry had now to find new levels of receipts and expenses which would be reasonable both for those engaged in the industry and for the public.

These changes could not be accomplished in an orderly way without close co-operation between the employers and their employees; they could not be carried through merely by changing a Government and, least of all, by turning our social and economic life topsy-turvy. Trade unions had a great and responsible part to play in the coming years. Their leaders knew that they could not go on for ever demanding increased rates of pay. Many of them also knew that under nationalisation their bargaining powers on behalf of their members would be curtailed. Let them give a lead to their members and adopt a policy of fair play all round.

The report and accounts were adopted unanimously.

Railway & Traders' Conference in Birmingham

The annual meeting of the Railway & Traders' Conference for the Birmingham, South Staffordshire, East Worcestershire, and North Warwickshire Area was held in Birmingham on June 15. Mr. L. C. Brittlebank, L.M.S.R. District Goods Manager, Birmingham, was in the Chair and was supported on the railway side by other District Officers of the G.W.R. and L.M.S.R. covering goods and passenger train services. Mr. T. Parker Smith, of Smith, Stone & Knight Limited, representing also the Birmingham Chamber of Commerce, headed the traders' panel.

Speaking of the work of the conference, Mr. Brittlebank recalled that it was one of the few which had met regularly since 1923. He was convinced of its value in bringing together railway officials and the trading community they served. Remembering that the trade of the district was so closely bound with transport, the railways were deeply conscious of their responsibilities in catering for the commercial interests.

He reminded his audience that at the outbreak of war the railways were able to place at the country's disposal an asset of supreme national and strategic importance. Of them it could be truly said they were ready for the greatest test that could be made of any undertaking. But for the British railways there would have been no Dunkirk, and without them it was difficult to imagine how the subsequent success of the Allied Forces operating from this country could have been achieved. All praise was due to railway servants of every degree in this severe test.

Mr. A. V. R. Brown, District Superintendent, G.W.R., Birmingham, underlined the Chairman's remarks and observed that even the traders of the country, who had a clearer view of these matters than the general public, could have no conception of the demands made on the railways in the war years. He hoped that when the history of these times came to be written the railway servants would get their due meed of praise. He also spoke of the value of personal contacts in the settlement of problems and felt that the conference had a special function to fulfil in the future.

Mr. Parker Smith thought that suggestions which emerged from these meetings for improvements in the consignment and despatch of goods should be followed readily by all traders, realising that in helping transport they were helping themselves. The relations between trade and transport in the district were exceedingly good and, as this would perhaps be the last meeting before his retirement, he was gratified at the evidence of this happy state of affairs. He was optimistic about the future of the country and was confident that the British character would conquer circumstances in peace as it had in war.

There would, he was sure, be such a demand for goods in this and in other countries, including those that had been more backward in the past, that the greater industrial capacity of the nations would be more than outweighed, and British goods would be required all over the world.

Mr. Felix J. Blakemore, O.B.E., J.P. (E. Blakemore & Sons Ltd.) spoke of the free enterprise on which the success of Britain had been built and hoped that the spirit of competition, exemplified in the railway industry, would long continue.

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Australasian Railway Statistics

The annual report on the workings of the Queensland Government Railways for the year ended June 30, 1944, contains a table in which are summarised the principal operating figures and statistics for each of the Government railway systems of the States which comprise the Australian Commonwealth and also of New Zealand. From the table, which is reproduced, will be seen the considerable variations which occur in each territory. The percentage of working expenses to earnings ranges from 79·81 in New South Wales to 87·22 in South Australia and 84·41 in New Zealand. Earnings per average mile open range between the £1,001 for Western Australia to the £5,631 of New South Wales. Working expenses per average mile open similarly are from £866·36 in Western Australia to £4,494 in New South Wales.

A similar statement compiled from statistics issued in respect of the year 1943 appeared in our issue of September 15, 1944.

It will be noticed that the figures for Victoria relate to the year ended June 30, 1943. This accords with the summary published by the Queensland Government Railways, which presumably had not received 1944 figures at the time the table was compiled. Although the report of the Victorian Railways for the year ended June 30, 1944, has since been published, and has been noticed in our columns, it does not include some of the data contained in the comparative analysis, and therefore we have left the Queensland statement in its original form.

COMPARATIVE ANALYSIS OF RAILWAY ACCOUNTS IN THE STATES OF QUEENSLAND (EXCLUDING UNIFORM GAUGE RAILWAY), NEW SOUTH WALES, VICTORIA, SOUTH AUSTRALIA, WESTERN AUSTRALIA, AND THE DOMINION OF NEW ZEALAND

Particulars	Queensland Year ended June 30, 1944*	New South Wales Year ended June 30, 1944	Victoria Year ended June 30, 1943	South Australia Year ended June 30, 1944	Western Australia Year ended June 30, 1944	New Zealand Year ended March 31, 1944
Area in square miles	670,500	309,432	87,884	380,070	975,920	104,015
Population	1,054,000	2,853,000	1,969,977	620,000	484,000	1,637,570
Miles open	6,947	6,127¼	4,758	2,547¼	4,381	3,504
Gauge	3 ft. 6 in. and 2 ft.	4 ft. 8½ in.	5 ft. 3 in. and 2 ft. 6 in.	5 ft. 3 in. and 3 ft. 6 in.	3 ft. 6 in.	3 ft. 6 in.
Capital (opened lines)	£40,198,880	£152,144,668	†£52,736,900	£29,908,070	£26,736,169	£70,999,125
Average cost per mile	£6,187	£24,840	£11,084	£11,740	£6,103	£20,262
Population per mile of railway	162	466	414	243	110	467
Cost per head of population	£38 2s. 9d.	£53 6s. 7d.	£26 15s. 5d.	£48 4s. 9d.	£55 4s. 10d.	£43 7s. 2d.
Gross earnings	£15,659,891	£34,501,192	£17,029,660	£6,001,982	£4,386,523	£15,325,306
Working expenses	£12,719,237	£27,535,343	£14,040,038	£5,114,652	£3,795,929	£12,757,336
Profit on working	£2,940,654	£6,965,849	£2,989,622	£887,330	£590,594	£2,567,970
Percentage of net earnings to capital (opened lines)	£7 6s. 3¾d.	£4 11s. 7d.	£5 13s. 5d.	£2 11s. 2d.	£2 4s. 2d.	£3 14s. 2d.
Percentage of working expenses to earnings—						
Maintenance	18·51	20·41	14·29	13·73	17·34	18·36
Locomotive	41·27	34·83	24·86	41·93	40·10	40·29
Traffic	19·36	19·68	21·59	23·76	21·24	23·82
General	2·08	4·89	21·70	7·80	7·86	1·94
Total	81·22	79·81	82·44	87·22	86·54	84·41
Earnings per average mile open	£2,410	£5,631	£3,579	£2,356	£1,001	£3,881
Working expenses per average mile open—	£	£	£	£	£	£
Maintenance	446·00	1,149	511·30	324	173·61	712·78
Locomotive	994·64	1,961	889·98	988	401·49	1,563·55
Traffic	466·63	1,108	772·76	560	212·63	924·70
General	50·19	276	776·79	183	78·63	75·39
Total	£1,957·46	£4,494	£2,950·83	£2,055	£866·36	£3,276·42
Earnings per train mile	s. d. 16 0¼	s. d. ‡	s. d. 18 5¾	s. d. 17 8¼	s. d. 14 4	s. d. 17 6¾
Working expenses per train mile—						
Maintenance	2 11¼	‡	2 7¾	2 5¼	2 6	3 2¾
Locomotive	6 7¼		4 7¼	7 5¾	5 9	7 1
Traffic	3 1¾		3 11¾	4 2¾	3 0	4 2¾
General	0 4		4 0	1 4¾	1 2	0 4
Total	13 0¼		15 2¾	15 5¼	12 5	14 10
Earnings per engine	£20,364	£30,079	£23,818	£18,525	£11,162	£21,205
Earnings per carriage (coaching)	£3,178	£4,559	£4,462	£2,643	£3,300	£2,804
Earnings per wagon (goods and livestock)	£540	£755	£411	£501	£260	£276
Earnings per head of population	£14 17s. 2d.	£12 1s. 10d.	£8 12s. 11d.	£9 13s. 7d.	£9 1s. 3d.	£9 7s. 2d.
Number of passenger journeys	37,641,152	250,565,758	195,830,057	27,356,303	18,773,221	38,611,267
Goods tonnage	5,421,077	18,602,711	8,017,601	3,417,103	2,410,417	8,233,489
Livestock tonnage	576,734	§	741,512	255,622	149,720	793,137
Average number of passengers per average mile of railway	5,793	40,892	41,158	10,739	4,285	11,130
Train mileage	19,544,360	‡	18,436,533	6,776,971	6,132,056	15,328,987
Train miles per average mile of railway open	3,008	‡	3,875	2,660	1,400	4,419

* Exclusive of uniform gauge railway. † Capital reduced by £25,564,189. Railway (Finances Adjustment) Act, 1936. ‡ Train mileage statistics suspended during war period. § Livestock statistics suspended during war period.

LOCATION OF INDUSTRY.—The Board of Trade has revoked the Location of Industry (Restriction) Order, 1942, and replaced it by the Location of Industry (Restriction) Order, 1945 (S.R. & O. 1945, No. 671). Copies may be obtained, price 1d. each, direct from H.M. Stationery Office, York House, Kingsway, W.C.2, or through any bookseller or newsagent. Under the new Order the control on the use of factories and warehouses is relaxed. It no longer applies to premises with an aggregate floor space of less than 3,000 sq. ft., nor to garages or motor vehicle or cycle repair shops of any size. Licences are not required in respect of the use of factories or warehouses let or sold to the user by a Government Department. This relaxation does not dispense with any obligation there may be to obtain licences under other Government controls. Apart from these exemptions, the control remains unaltered, and applications for licences should be addressed to the Board of Trade Regional Controller in the region in which the premises are situated. Licences issued under the previous Order remain valid.

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Notes and News

Agreed Charges.—Applications have been made to the Railway Rates Tribunal for the approval of 36 further agreed charges under the provisions of Section 37 of the Road & Rail Traffic Act, 1933.

Home Railway Dividends.—The Boards of the L.M.S.R., L.N.E.R., and Southern Railway have fixed, provisionally, Thursday, July 26, as the date of meetings to consider interim dividends for 1945. The provisional date for the G.W.R. meeting is Friday, July 27.

Hoffmann Manufacturing Co. Ltd.—The profit of the Hoffmann Manufacturing Co. Ltd. for the year ended December 31, 1944, was £77,606 (£217,930). The interim dividend was at the rate of 7½ per cent. (same). No final dividend was declared in respect of 1944, against 10 per cent. for 1943.

Whitechapel & Bow Railway Company.—In respect of the half-year ending June 30, 1945, the directors of the Whitechapel & Bow Railway Company fixed June 16 as the date for striking the balances for interest on the 4 per cent debenture stock. Interest on such stock will be paid to holders registered at the close of business on that date.

Scottish Seed Potato Traffic.—The L.M.S.R. and L.N.E.R., by their direct rail services have brought to England for this season's planting 254,000 tons of Scottish seed potatoes, an increase of 19,000 tons over the previous season. In addition, these companies conveyed more than 55,000 tons by rail to Scottish ports for shipment to England by coasting vessels.

Argentine Railways Mission to the United States.—A technical mission representing British-owned railways in Argentina is expected to leave shortly for the United States, according to a Reuter's report from Buenos Aires. The mission, headed by Major R. K. Hubbard, Deputy General Manager of the Central Argentine Railway Limited, will travel extensively in the United States to study the latest developments in electric and diesel reaction.

Accident at Caterham, Southern Railway.—The 9.34 a.m train for London was leaving Caterham Station on June 26, when it was involved in a head-on collision with the 8.55 a.m. train from London. The motormen of both trains were killed. One woman was injured and several other passengers were treated for shock. The up and down lines were blocked, and a traffic diversion was arranged. Normal service was resumed in the afternoon.

Railway Red Cross Coach.—After a successful tour of many railway centres throughout Great Britain, the exhibition coach which has played such an important part in publicising the British Red Cross "Penny-a-Week Fund," was opened at Paddington on June 25 by Lord Wigram, Chairman of the British Red Cross Sports Committee, and a director of the London Midland & Scottish Railway Company. Lord Wigram was introduced by Lord Portal, supported by Mrs. O. S. Prentice, Director of the County of London branch, British Red Cross Society; Miss Greta Richards, the Railway Queen, and Mr. H. Lane, of the National Union of Railwaymen. The amount contributed by railway employees to the Red Cross fund, since its inauguration, is in the neighbourhood of £500,000. At the 16 centres toured on the G.W.R., the coach has been visited by 47,520 persons and this total is expected to exceed 60,000 at the conclusion of its exhibition at Paddington. More than 175,000 persons have paid a visit to the coach exhibition, which emphasises the valuable work of the British Red Cross Society among the wounded and prisoners of war.

Rhodesia Railways Limited.—Approximate gross receipts of the Rhodesia Railways Limited for the month of April, 1945, were £471,288 and for the seven months ended April 30, 1945, were £3,491,415 as compared with £503,632 and £3,711,925, respectively, for the corresponding periods in the previous year. The number of miles open is 2,445.

Leeds Corporation Light Railways.—Application is being made by the Leeds Corporation to the Minister of War Transport for an Order under the Light Railways Acts, 1896 and 1912, and the Railways Act, 1921, empowering the Corporation to make and work an extension 1 mile 3·09 chains in length connecting an authorised line in Belle Isle Road with the existing tramway in Middleton Park Road.

COLONEL F. GORE BROWNE'S MESSAGE TO S.R. STAFF

Colonel Eric Gore Browne, Chairman of the Southern Railway Company, has sent the following message to the staff :—

"Now that the War in Europe is won I want to send a special message to thank all Southern Railway men and women for their contribution to this great and glorious achievement.

Through these long years of war you have all stood shoulder to shoulder, bearing many hardships and much suffering without complaint, and delivering the goods in spite of all the enemy could do to hamper yout effort.

It has been my privilege since I have been Chairman to share some of the dangers with you, and on many occasions to see for myself the undaunted spirit which you all have shown in meeting and dealing with enemy action.

You have helped to write a great chapter in the history of the Southern Railway.

Well done indeed!

We will go forward together in confidence and in hope.

ERIC GORE BROWNE,
Chairman."

Beira Railway Co. Ltd.—For the month of April, 1945, the approximate gross receipts of the Beira Railway Co. Ltd. were £72,858 and for the seven months ended April 30, 1945, were £536,577 as compared with £76,455 and £542,285 for the corresponding periods in the previous year. The number of miles open is 204.

Tees Conservancy Order.—Under the Special Enactments (Extension of Time) Act, 1940, the Minister of War Transport has made an Order entitled "The Tees Conservancy Act, 1920 (Extension of Time) Order, 1945," modifying certain provisions as to time laid down in Section 34 of the Tees Conservancy Act, 1920.

Prisoners of War Conveyance.—The Minister of War Transport on June 14 made the Emergency Powers (Defence) Road Vehicles and Drivers (No. 2) Order, 1945, to provide for the carrying of prisoners of war to or from the site of work on which they are engaged in vehicles which are not licensed as public service vehicles.

C. C. Wakefield & Co. Ltd.—Trading profit of C. C. Wakefield & Co. Ltd. for the year 1944 after charging Dominion and foreign taxes was £427,075 (£378,178) and dividends, interest, etc., brought in £9,832, making £436,907. Net profits, after providing for depreciation and for United Kingdom, Dominion and foreign taxation, less Dominion income tax relief, amounted to £187,665 (£242,782), and the balance brought forward from 1943 was £108,275, making £295,940. An interim dividend of 35 per cent., less tax at 9s. 5d. in the £, was paid on November 1, 1944, and the final dividend now recommended is 65 per cent., less tax at 9s. 2d. in the £. These two dividends absorb £134,323, leaving £161,617 to be carried forward.

Davies & Metcalfe Limited.—The report of Davies & Metcalfe Limited for the year 1944 shows that the net trading profit, after providing for all expenses, including depreciation and taxation, was £14,672 (£14,189), and other income was £446 (£381), making £15,118 (£14,570).

British and Irish Railway Stocks and Shares

Stocks	Highest 1944	Lowest 1944	Prices June 26, 1945	Prices Rise/Fall
G.W.R.				
Cons. Ord.	62½	55	56½	+ 2½
5% Con. Pref. ...	122½	114¾	118½	+ 1
5% Red. Pref. (1950)	110½	104	105	—
5% Rt. Charge ...	135½	128	132½	—
5% Cons. Guar. ...	134⅞	125	129½	+ 1
4% Deb.	118½	112¼	115	—
4½% Deb.	118½	114	116½	− 2
4½% Deb.	124½	119½	122½	—
5% Deb.	137	129½	136½	—
2½% Deb.	77	73½	77½	—
L.M.S.R.				
Ord.	34⅜	27⅛	28½	+ 1½
4% Pref. (1923) ...	64½	55	56	+ 2
4% Pref.	81	72½	74½	+ 1½
5% Red. Pref. (1955)	105⅞	102	103½	—
4% Guar.	107½	99½	102	—
4% Deb.	111½	104	107½	—
5% Red. Deb. (1952)	111	108	108½	—
L.N.E.R.				
5% Pref. Ord. ...	10½	7 7/16	7½	+ ⅛
Def. Ord.	5 7/16	3¼	3⅜	+ ⅛
4% First Pref. ...	68⅜	55½	55	+ 1½
4% Second Pref. ...	35⅜	28½	29	+ 1½
5% Red. Pref. (1955)	102½	97½	100½	—
4% First Guar. ...	105½	96⅜	100½	—
4% Second Guar. ...	95½	88½	94½	—
3% Deb.	88½	80⅜	86½	—
4% Deb.	110½	103¼	107	—
5% Red. Deb. (1947)	105⅜	101¼	101½	—
4½% Sinking Fund Red. Deb.	107	104½	104½	—
SOUTHERN				
Pref. Ord.	80½	71⅞	73	+ 1
Def. Ord.	26⅜	23	23½	+ 1
5% Pref.	122	113½	115½	—
5% Red. Pref. (1964)	117½	112½	114½	—
5% Guar. Pref. ...	134	125½	129½	—
5% Red. Guar. Pref. (1957)	115⅜	112½	115½	—
4% Deb.	118	110	113	—
5% Deb.	135½	127	134½	—
4% Red. Deb. (1962-67)	111½	107½	109½	—
4% Red. Deb. (1970-80)	112	108⅜	110½	—
FORTH BRIDGE				
4% Deb.	107	103	104	—
4% Guar.	106½	102	104	—
L.P.T.B.				
4½% "A"	125	119	120½	—
5% "A"	133½	128	131½	+ 1
3% Guar. (1967-72)...	99½	98	99	—
5% "B"	124½	118⅞	120½	+ 1
"C"	72⅜	64½	67½	—
MERSEY				
Ord.	35⅜	33	36½	—
3% Perp. Pref. ...	72	66	71	—
4% Perp. Deb. ...	105	103	106	—
3% Perp. Deb. ...	85½	79½	84	—
IRELAND*				
BELFAST & C.D.				
Ord.	9	6	6½	—
G. NORTHERN				
Ord.	33⅜	19	26½	+ ⅛
Pref.	49	37	43⅛	− ⅛
Guar....	70	57⅞	68	—
Deb.	90½	81½	89⅛	+ ⅛
IRISH TRANSPORT				
Common	—	—	75	+ 1
3% Deb.	—	—	100½	− ¼

* Latest available quotation

OFFICIAL NOTICES

None of the vacancies on this page relate to a man between the ages of 18 and 50 inclusive unless he is excepted from the provisions of the Control of Engagement Order, 1945, or the vacancy is for employment excepted from the provisions of that Order.

ARMY OFFICER, aged 39 years, married, public school education, at present in Germany, expects release early August, and will then require placing in suitable job. Has mechanical knowledge of all types of transport and has been employed since 1939 in road transport branch of the Army, controlling daily distribution and maintenance of up to 2,000 vehicles. Had own business pre-war.—Write Box No. 206, c/o *The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is 9.30 a.m. on the preceding Monday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

A WELL-KNOWN and old-established firm of Engineers and Merchants, representing a group of leading British manufacturers in India, have a vacancy on their staff for service in that country. Applicants—who should not be above 25 years of age—are invited to submit brief details of schooling, training and subsequent career to Box No. 296, c/o *The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

MECHANICAL Engineer, Locomotive, Carriage and Wagon, is prepared to act as part time or occasional Consultant to a reputable Company.—Apply Box No. 226, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

Universal Directory of Railway Officials and Railway Year Book

50th Annual Edition, 1944-45

Price 20/- net.

THE DIRECTORY PUBLISHING CO., LTD., 33, Tothill Street, London, S.W.1.

Adding £2,838 brought forward gives a total of £17,956. The dividend for the year is 11 per cent. (same); £999 is written off patents and £3,000 off goodwill, leaving £2,957 to be carried forward.

L.P.T.B. (Public Service Vehicles) (Revocation) Order.—The Minister of War Transport on June 11 made the London Passenger Transport Board (Public Service Vehicles) (Revocation) Order, 1945. This Order cancels the authority enabling the board to operate public service vehicles for certain purposes outside the London Passenger Transport Area.

L.M.S.R. (N.C.C.) Summer Timetable.—The summer timetable of the L.M.S.R. (Northern Counties Committee) came into force on Monday, June 11. The outstanding features in the new programme are the express trains between Belfast and Londonderry and between Belfast and Portrush. On Saturdays trains leave Belfast York Road Station for Portrush at 9.15, 9.55, 11.55 a.m.; 12.55, 1.55, 2.15, 3.55, 5.45, and 7.20 p.m. Catering facilities are available on nearly all trains, including expresses, between Belfast and Londonderry.

Sand-Blasting Regulations.—Because of the risk of contracting silicosis among operatives engaged in industrial sand-blasting, the Ministry of Labour and National Service has issued special regulations under the Factories Act, 1937. The principal requirements of the regulations include a general prohibition of the introduction of siliceous abrasives into blasting apparatus. This requirement applies to all industries. A second requirement, which is not confined to steel castings, stipulates more elaborate protective measures in connection with the incidental cleaning of castings.

Diesel Engine Construction in India.—Arrangements have been made between British Oil Engines (Export) Limited and Kirloskar Brothers for the manufacture by the latter, in India, of all types of diesel engine from 1½ b.h.p. to 1,500 b.h.p. Provision has been made for the exchange of technical information and for the training of Indian personnel in the factories of the British export group, comprising Mirrlees, Bickerton & Day Limited, Petters Limited, J. & H. McLaren Limited, and Oil Engines (Coventry) Limited. The engines manufactured by Fielding & Platt Limited are also included in the agreement.

Buenos Ayres Great Southern Railway Co. Ltd.—An extraordinary general meeting of the Buenos Ayres Great Southern Railway Co. Ltd. was held at River Plate House, Finsbury Circus, E.C.2, on Tuesday, June 12, 1945, at 12.30 p.m., when a special resolution was submitted to alter the articles of association of the company so as to enable the directors to appoint additional directors within the maximum number fixed by the articles. As the majority of those present and voting was insufficient to carry a special resolution, a poll was demanded. The result of the poll was: in favour of the resolution 236,988 votes, against 534 votes. At a subsequent meeting of the Buenos Ayres Western Railway Limited a similar resolution was submitted, and carried with one dissentient.

A Canteen from Canada at Southampton Docks.—A trailer kitchen, to be used as a static canteen, has been presented to the Southern Railway by the War Effort Committee of Wellington Canadian Council, Ontario. On behalf of the company, the canteen was accepted by Mr. H. A. Short, Docks & Marine Manager, Southampton, on June 22. The canteen was handed over by Colonel E. H. Jones, Administrative Officer, representing the High Commissioner for Canada, in the presence of Southern Railway officers and employees.

Permanent Way Institution, Annual Summer General Meeting.—The annual summer general meeting of the Permanent Way Institution will be held at the Institution of Civil Engineers, Great George Street, Westminster, S.W.1, on July 7 at 2.30 p.m. The chair will be taken by the President, Mr. V. A. M. Robertson, C.B.E., M.C., M.Inst.C.E., M.I.Mech.E., Chief Civil Engineer, Southern Railway. A lecture, illustrated with lantern views, on "Flat-Bottom Track," will be given by Mr. J. C. L. Train, M.C., M.Inst.C.E., Chief Engineer, of the L.N.E.R.

Southdown Motor Services Limited.—In the year ended March 31, 1945, Southdown Motor Services Limited, which is controlled jointly by the Southern Railway Company and B.E.T. Omnibus Services Limited, secured a gross revenue of £1,672,910 (£1,537,217). After deducting all items chargeable against revenue, including operating and maintenance expenses £762,800 (£685,405), fuel tax, duties and rates £111,141 (£104,766), provision for taxation £598,756 (£567,500), and depreciation and renewals £106,979 (£103,592), there is a profit of £71,040, to which is added £38,633 brought forward, making £109,673. General reserve again gets £10,000, and the dividend for the year is 10 per cent. less tax (same), leaving £62,173 to be carried forward.

Formation of Southern Section, Institute of Transport.—A meeting of members of the Institute of Transport in the counties of Dorset, Hampshire and Sussex was held at Southampton on June 9 when it was resolved to set up a Southern Section. The meeting, which was accorded a welcome by the Mayor of Southampton, had been convened by Mr. E. Burrow, the Honorary Corresponding Member of the Council for the area, and was presided over by Mr. M. G. J. McHaffie. After the resolution to set up the Section had been adopted, the meeting was addressed by Mr. G. S. Szlumper, Past-President and Chairman of the Examinations Committee of the Institute, who welcomed the step which had been taken and expressed the Council's satisfaction. Officers of the new Section were elected as follow:—Chairman, Mr. M. G. J. McHaffie; Vice-Chairmen, Messrs. F. C. Bishop, A. F. R. Carling, A. J. Wright; Honorary Treasurer, Mr. P. J. Baker; Honorary Secretary, Mr. R. C. Hardy.

Cost-of-Living Index.—The official cost-of-living index figure at June 1 last was 104 points above the level of July, 1914, compared with 103 points at May 1 last. In June, 1939, it was 53 points above July, 1914.

S.R. Extension of Time Application.—The Southern Railway Company is applying to the Minister of War Transport for an Order under the Special Enactments (Extension of Time) Act, 1940, extending by three years from October 1, 1945, the time now limited by the Southern Railway (Extension of Time) Order, 1942, for, *inter alia*, the acquisition of lands:—(1) required for a bridge widening in Bermondsey; (2) in Boldre (New Forest); (3) required for subways and enlargements and diversion of tunnels (Waterloo & City Railway) authorised by the Southern Railway Act, 1939; (4) in Folkestone.

Wolfe Barry, Robert White & Partners.—Notice is given in *The London Gazette* of June 19 that the partnership between the late Andrew Custance Carr and Colin Robert White in the business of consulting engineers at 164, Grosvenor Gardens House, Grosvenor Gardens, Westminster, under the style or firm of Wolfe Barry, Robert White & Partners was dissolved by mutual consent as from January 1, 1945. Mr. Colin Robert White continues to carry on the business under the same style or firm. The notice is inserted on behalf of the National Bank of India Limited, as Executor of the will of Mr. A. C. Carr.

Contracts and Tenders

Below is a list of orders placed recently by the Egyptian State Railways:—

Attwater & Sons Ltd.: Mica.
Furnival & Co. Ltd.: Knives.
W. Riddell, Cousland & Co. Ltd.: Brushes.
Vacuum Brake Co. Ltd.: Wire brushes.
W. H. Wilcox & Co. Ltd.: Foot valves.
Sigmund Pumps (Great Britain) Limited: Pumps, hand semirotary.
General Electric Co. Ltd.: Electric insulating material.
P. & W. MacLellan Limited: Steel bars.
Samuel Osborn & Co. Ltd.: Stainless steel.
Arthur Balfour & Co. Ltd.: Engineer's hand taps and steel for snaps.
Babcock & Wilcox Limited: Insulating valves.
Standard Telephones & Cables Limited: Valves.
Johnson & Phillips Limited: Potential transformers.
Superheater Co. Ltd.: Superheater headers.

Railway Stock Market

Business in stock markets remained on a limited scale, but the tone was generally firm on the confidence indicated by absence of selling. British Funds recorded further gains on expectations of increased demand owing to repayment moneys in connection with the recent big Australian conversion operation and also repayment of the 2 per cent. Conversion Loan.

Securities which had recently declined on political uncertainties developed a rallying tendency under the lead of home rails, the latter showing a welcome recovery. This reflected diminished fears of nationalisation, but also better demand attracted by the big yields which have tended to be emphasised by the pending interim dividends. Moreover, preference stocks were also better. As has been pointed out here on numerous occasions, home rails are well below last year's highest levels, and so long as the fixed rental agreement is in force, dividends at last year's rates are virtually assured. Anticipations in connection with the pending interim decisions have not been revised in the market. The Southern is precluded by its constitution from making a half-yearly distribution on its deferred stock, and in recent years the L.M.S.R. has followed the cautious policy of not making an interim payment on the ordinary stock. Home rail prior charges have also recorded small gains as compared with a week ago, partly in sympathy with gilt-edged stocks.

Other sections of the railway market claimed more attention. Canadian Pacifics recorded further gains, the preference and debenture stocks also improving. Demand was attributed again mainly to talk of a forthcoming adjustment of the Canadian dollar exchange rate to parity with the U.S. dollar. French railway sterling bonds advanced on the French Government's decision to pay off the accumulated arrears of interest, and gains of up to eight points were shown on balance. Argentine rails made response to hopes of a satisfactory outcome to Sir Montague Eddy's further visit to the Argentine. Mexican issues continued to attract more attention, particularly Mexican Railway 6 per cent. debentures, which rose further to 58 although official news of fresh developments is still awaited in the market. Central Uruguay stocks were better again, while United of Havana 1906 debentures firmed up a little on hopes that the expected capital reconstruction may shortly be announced. Antofagasta ordinary was steady on the results, but the preference declined fractionally.

Among home rails, Gt. Western rallied to 56, compared with 54 a week ago, the 5 per cent. preference from 117½ to 118, while the 4 per cent. debentures remained at 115. L.M.S.R. was 28¼, a rise of 1½; the 1923 preference was 2 points up to 56, the senior preference also gaining 1½ at 76, and the 4 per cent. debentures were ½ higher at 108. Among L.N.E.R. stocks, the second preference was 2¾ better at 29, and the first preference at 55 improved 2 points compared with a week ago. L.N.E.R. first guaranteed, however, was fractionally lower at 100 and the second guaranteed unchanged at 94½. Southern deferred rallied from 22½ to 23¾, and the preferred from 71⅞ to 72⅜; the price of the latter seems attractive, bearing in mind that it can be regarded as carrying the interim payment of 2½ per cent. Southern 5 per cent. preference remained at 115½ and the 4 per cent. debentures at 113. London Transport "C" was unchanged at 67; but the "A" stocks firmed up, the 4½ per cents. to 121¾, and the 5 per cents. to 131¾, while the 5 per cent. "B" at 120 also rallied.

Among Argentine rails, Buenos Ayres Great Southern recovered from 11 to 12, the 5 per cent. preference from 26 to 27½, and the 4 per cent. debentures were better at 63½. Buenos Ayres & Pacific firmed up to 6, while the consolidated debentures rose from 55½ to 57½. Buenos Ayres Western improved to 12, and the 4½ per cent. preference to 28. Central Argentine issues were also better, the ordinary at 8¾, and the 4½ per cent. preference at 19½; the 4 per cent. debentures rallied to 57 and the 5 per cent. debentures to 65½. Central Uruguay second debentures at 26 recorded a further gain. Among French rails, Nord 6 per cents. rose to 121½, and the Midi and Orleans 4 per cents. to 103½. Canadian Pacifics were 22⅜, compared with 20⅛ a week ago, the 4 per cent. preference also improving to 70½ and the 4 per cent. debentures to 104.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1943/4	No. of Weeks	Aggregate traffics to date: Totals 1944/5	Aggregate traffics to date: Totals 1943/4	Aggregate traffics to date: Increase or decrease	Shares or Stock	Prices: Highest 1944	Prices: Lowest 1944	Prices: June 26, 1945	Yield % (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	17.6.45	31,790	– 1,690	24	739,010	675,270	+ 63,740	Ord. Stk.	13½	9½	10½	Nil
	Argentine North Eastern	753	16.6.45	19,325	+ 2,219	50	925,500	778,700	+ 146,800	,,	6½	4½	9	Nil
	Bolivar	174	May, 1945	4,670	– 789	21	25,635	26,518	– 883	6 p.c. Deb.	18⅜	7½	8½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds	19-⅞	15	24½	Nil
	Buenos Ayres & Pacific	2,773	16.6.45	112,500	+ 10,000	50	6,817,187	5,714,125	+ 1,103,062	Ord. Stk.	7½	3½	5½	Nil
	Buenos Ayres Great Southern	5,080	16.6.45	212,125	+ 44,063	50	10,412,750	9,272,562	+ 1,140,188	Ord. Stk.	14½	9½	12	Nil
	Buenos Ayres Western	1,924	16.6.45	70,625	+ 4,000	50	3,541,687	2,999,937	+ 541,750	,,	13½	9½	12½	Nil
	Central Argentine	3,700	16.6.45	178,191	+ 13,597	50	9,023,315	8,087,994	+ 935,321	,,	10½	6⅝	8½	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	4½	3	4½	Nil
	Cent. Uruguay of M. Video	972	16.6.45	41,630	+ 3,911	50	1,774,668	1,739,410	+ 35,258	Ord. Stk.	5½	4	6	Nil
	Costa Rica	262	Apr., 1945	28,642	+ 3,253	33	231,946	225,154	+ 6,792	Stk.	17½	14½	15	Nil
	Dorada	70	May, 1945	35,000	+ 9,256	22	148,595	123,083	+ 25,512	1 Mt. Deb.	101	101	101½	£5 18/3
	Entre Rios	808	16.6.45	29,206	+ 9,094	50	1,251,462	1,035,412	+ 216,050	Ord. Stk.	6½	4½	5½	Nil
	Great Western of Brazil	1,030	16.6.45	21,400	– 1,700	24	610,100	533,100	+ 77,000	Ord. Sh.	38/-	23/3	27/6	Nil
	International of Cl. Amer.	794	Api., 1945	$238,269	+ $92,127	17	$816,062	$915,502	– $99,440	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	1⅜	¼	1	Nil
	La Guaira & Caracas	22½	May, 1945	7,407	– 1,300	21	29,823	38,153	– 8,330	5 p.c. Deb.	88	79	78½	£6 7/5
	Leopoldina	1,918	16.6.45	57,291	+ 10,972	24	1,109,698	1,095,145	+ 14,553	Ord. Stk.	5⅛	4½	4	Nil
	Mexican	483	21.6.45	ps. 585,400	+ ps. 249,900	23	ps.14,855,500	ps. 10,368.000	+ ps. 4,487,500	Ord. Stk.	⅜	⅛	2	Nil
	Midland Uruguay	319	Apr., 1945	17,777	+ 1,908	43	174,608	171,638	+ 2,970	—	—	—	—	—
	Nitrate	382	15.6.45	8,994	+ 3,413	23	85,144	87,451	– 2,307	Ord. Sh.	75/10	65/10	70/-	£3 11/5
	Paraguay Central	274	15.6.45	£64,652	+ £14,195	50	£3,046,262	£2,630,696	+ £415,566	Pr. Li. Stk.	79½	68	78½	£7 12/10
	Peruvian Corporation	1,059	May, 1945	133,173	+ 9,672	48	1,429,695	1,209,296	+ 220,399	Pref.	9	10	9½	Nil
	Salvador	100	Apr. 1945	c 149,000	– c 3,000	43	c 1,308,000	c 1,310,000	– c 2,000	—	—	—	—	—
	San Paulo	153½	—	—	—	—	—	—	—	Ord. Stk.	57½	46	52	£3 16/11
	Taltal	156	May., 1945	6,625	+ 1,485	47	32,905	59,800	– 26,895	Ord. Sh.	21/3	13/9	13/9	Nil
	United of Havana	1,301	16.6.45	51,931	– 2,173	50	2,707,737	2,901,653	– 193,916	Ord. Stk.	4	2½	2½	Nil
	Uruguay Northern	73	Apr., 1945	1,934	+ 467	43	16,230	14,732	+ 1,498	—	—	—	—	—
Canada	Canadian Pacific	17,028	21.6.45	1,270,600	+ 57,400	23	29,097,200	29,111,200	– 14,000	Ord. Stk.	17½	13½	22½	£4 18/11
India	Barsi Light	202	Apr., 1945	31,072	+ 2,640	4	31,072	28,432	+ 2,640	Ord. Stk.	129½	97½	130½	£3 9/-
Various	Egyptian Delta	607	20.5.45	15,100	— 3,290	7	84,641	94,755	– 10,114	Prf. Sh.	7½	5½	6½	Nil
	Manila	—	—	—	—	—	—	—	—	B. Deb.	63½	58	57/6	Nil
	Midland of W. Australia	277	Apr., 1945	16,473	– 4,148	44	189,748	291,154	– 101,406	Inc. Deb.	101½	99½	95½	£4 3/9
	Nigeria	1,900	28.4.45	285.931	+ 16,598	4	—	—	—	—	—	—	—	—
	South Africa	13,301	5.5.45	1,000,920	+ 108.249	5	4,962,074	4,276,017	+ 686,057	—	—	—	—	—
	Victoria	4,774	Feb., 1945	1,252,999	– 43,035	4	—	—	—	—	—	—	—	—

Note. Yields are based on the approximate current price and are within a fraction of ¼. Argentine traffics are given in sterling calculated @ 16 pesos to the £

† Receipts are calculated @ 1s. 6d. to the rupee